

Interpreting Critical Natural Resource Issues in Canadian and United States National Park Service Areas

Michael E. Whatley

Natural Resources Report NPS/NRCACO/NRR-95/17



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This project was part of a cooperative exchange between the U.S. National Park Service and the Canadian Parks Service/Parks Canada under the sponsorship of the Horace M. Albright-Conrad L. Wirth Employee Development Program.

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Denver, CO 80225-0287

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March 1995

**United States Department of the Interior
National Park Service
Natural Resources Publication Office
Denver, Colorado**

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Preface

In the 1980s, the U.S. National Park Service (NPS) expanded efforts to address environmental issues within parks. The momentum came from congressional mandates as well as from the Service's own expanding resource management program. Natural resource scientists and resource managers know that the resolution of natural resource issues requires public support, and at times behavioral change. Former NPS Western Region Chief of Interpretation Richard Cunningham addressed this concern by initiating a series of bioregional conferences, which linked park areas that shared common environmental themes (e.g., island parks, seashore areas, and mountain parks). Presentations at these conferences were shared equally by natural resource scientists, resource managers, and interpreters.

In the spring of 1987, under the direction of NPS Associate Director for Natural Resources Dr. F. Eugene Hester, a related three-month assignment was established for two field interpreters. One of their tasks was to develop a servicewide workshop on interpreting critical resource issues. Another task was to prepare a report, based on discussions and findings generated at the national workshop on "Communicating Critical Resource Issues Effectively to the Public Through Interpretation."

Meanwhile, the Canadian Parks Service/Parks Canada (CPS) was on a similar track. Their incentive was part of a larger agenda being promoted by the Canadian national government to address environmental issues. At the same time, various park administrators within the U.S. and Canadian park systems were seeking ways to share ideas. In July 1990, NPS Chief of Interpretation Mike Watson and CPS Director of Visitor Activities Gary Sealey agreed to establish a mutual exchange mission. A special project was set up involving site visits to Canadian national parks and participation in related training activities. A letter to the NPS Director from Assistant Deputy Minister A. Lefebvre-Anglin of the Canadian Department of Environment summarizes the focus of this cooperative project:

There has been a continuing dialogue on common interests...in how we are "interpreting critical natural resource issues" in our parks system. That issue is very germane at this time as the Government of Canada recently released "Canada's Green Plan for a Healthy Environment" and the Canadian Parks Service is making extensive efforts to ensure that the interpretive efforts throughout our organisation support that initiative. For us that means ensuring that visitors understand the role parks and other natural areas play in the maintenance of a health environment. It means using some of the very real management issues we face to illustrate broader environmental challenges and it means using parks as ecological benchmarks and examples of the sustainable use of resources. An exchange of ideas would be welcome....

The objectives were to conduct field studies and to prepare a report based on Canadian and U.S. examples of effectively communicating natural resource issues and concerns. The audience included scientists, interpreters, and resource managers. The report that emerged benefited from the input of many people from a variety of disciplines and locations. Hopefully, this spirit of teamwork between individuals, regions, and nations will continue and grow, along with a healthier environment for both parks and people.

Michael E. Whatley
Cape Cod National Seashore
U.S. National Park Service
January 1995

Introduction

Many of the resource conservation issues that now face us have led to a new direction in managing national park areas through the intentional blending and uniting of science, resource management, and interpretation.

That is not to say this approach was overlooked in the past. Previously, little guidance or system-wide support was available, and virtually no network for sharing successful techniques or results existed. However, many resource issues needed to be addressed: too many burros in the Grand Canyon; too few grizzlies in Yellowstone; too many wildlife road kills in Jasper, Banff, Kootenay, and Yoho; the adverse proliferation of nonnative species in Hawaii; the diminution of nesting areas for threatened birds on Cape Cod; and so forth.

The National Park Services of Canada and the United States have responded to these concerns in several ways. Resource management plans in the United States and resource conservation plans in Canada have become the primary means for addressing resource conservation issues at individual parks. Earlier, the Threats to Parks Survey in the United States and its equivalent State of the Parks Report in Canada identified resource issues and environmental concerns on a broader basis. An organized approach to recognizing resource conservation issues is well underway. However, critical resource issues have become synonymous, and at times entangled, with significant human interests.

At times, the human interactive factor is indirect, such as air and water quality considerations outside park boundaries, but nonetheless affecting park resources. At other times the human link is direct—erosion and trampling of natural features; carelessly harming and endangering wildlife; and polluting or otherwise degrading critical habitats. Sometimes solutions to these problems merely require enhanced public awareness, whereas for others, direct individual behavioral change is needed.

Resource management specialists, scientists, and interpreters have found that by teaming up they can address critical resource conservation issues more effectively. Servicewide training courses in Canada and the United States currently are under way, along with increased networking among professionals to share successful methods and techniques. The outcome of these efforts has resulted in a fresh look at how both organizations are developing new strategies and techniques for interpreting critical resource issues, particularly cases involving adverse human interaction and requiring behavioral change.

Interpreting critical natural resource issues effectively depends on skillful communication of scientific findings.

This approach has been going on in varying degrees since the formalization of interpretive efforts in national parks in the 1920s. But concern for how to most effectively interpret critical natural resource issues in order to achieve successful results is relatively new.

What sets critical natural resource issues interpretation apart is that it focuses more extensively on *problems* and their *solutions*. Traditional interpretive topics commonly are general or focus on basic resource information. They may have titles such as “Birds of the Forest” or “Layers in Time.” Critical natural resource topics require a different focus. For example, they might include “Birds in Peril—A Flyway Divided,” or “Helping Time Heal—Reducing Human Threats to Ancient Resources.”

Thus, when dealing with critical natural resource issues, a more elaborate approach is often needed to achieve successful results. It includes determining the issue, determining the message, determining public support for resource management actions, targeting the message at specific audiences, ensuring relevancy of the message to selected audiences, and appropriately delivering the message.

Critical natural resource issues are generally defined through findings made by scientists and resource managers. Such issues are often described in a technical format. However, facts must support interpretive presentations—and not be the presentation. Noted interpretive spokesperson Freeman Tilden once said, interpretive presentations must “relate to something within the personality or experience of the visitor, otherwise they will be sterile.” Thus a great deal of effort must go into “translating” technical resource issue information into a popular and understandable context. In short, studies in the United States and Canada have shown that regardless of the content, accuracy, or depth of knowledge presented while interpreting critical natural resource issues, the success or failure of the program rests entirely on its understanding and retention by the audience.

Field examples from the United States and Canadian national parks demonstrate that by carefully combining scientific knowledge with effective communication techniques and by identifying target audiences and other pertinent factors, critical resource needs can be met, and successful results achieved.



Part I : The Process

From Solid Beginnings:

At the onset of national park interpretive efforts, scientific expertise and effective communication techniques were intentionally combined

In the summer of 1919, Stephen T. Mather, dynamic director of the newly established U.S. National Park Service, attended a lecture by prominent University of California scientist Dr. Loye Miller at the Fallen Leaf Lake Lodge, Lake Tahoe. Mather was en route on a brief vacation from Yosemite National Park to Washington D.C. Mather had been depressed. He feared that developers were about to establish a substantial foothold in Yosemite Valley, and could see no way to stop them.

Dr. Miller was at Lake Tahoe as part of an innovative “nature guide” program developed by Dr. Charles M. Goethe, a prominent west coast educator, who had observed similar programs in Europe. By sheer coincidence, Mather sought lodging at the Fallen Leaf Lake Lodge on one of the nights that Dr. Miller was making a presentation.

Mather observed an enthusiastic crowd in the lodge auditorium, where Dr. Miller was captivating the audience with his ability to imitate wild bird calls. The professor’s talks on avian “music” were so popular that people often stood outside the overcrowded hall windows in order to hear him. Mather was inspired by this presentation. He persuaded Dr. Goethe to introduce in the summer of 1920 an experimental federal nature guide program at Yosemite National Park.

According to Dr. Goethe, Mather’s strategy was to use the nature guide program to achieve “victory over his opposition” and “with it he still could translate his national park system dream into actuality.” Years later, Dr. Miller further confirmed that this was indeed the strategy by remarking:

When folks, after a 1920 field excursion, or at any campfire talk expressed appreciation, the Ranger Naturalist was to explain Washington happenings. Then he was to say: ‘if you want a part in this war (on development), send even as little as a postcard to both your Senators and Representatives.’ These poured into Washington, clinching the victory.

It was no accident that scientific scholars were chosen for serving as the first ranger naturalists in Yosemite Valley. More than academic knowledge made these individuals successful. They were effective communicators.

A similar lineage exists with early interpretive efforts in Canadian national park areas. Knowledgeable field individuals became the system's first warden naturalists in national park areas in western Canada. Thus, on both sides of the border, as scholars became naturalists, they intentionally sought out effective communication techniques for reaching their audiences. It was an exciting time. In those days, using campfires as gathering places for explaining the wonders of nature was an innovative idea. Likewise, Dr. Harold C. Bryant, another associate in Dr. Goethe's original California nature guide experiment, recalled that in the early days in Yosemite Valley, it was a novel idea to "develop a display of wildflowers preserved in tin cans and bottles obtained from the dump, carefully labeled with both common and scientific names." He noted that "children's interest could be caught by making a separate children's trip a game full of competition and exploration." He further noted that "identification of plants by feeling and smelling and identification of birds by voice sounds" were extremely popular.

Other pioneers in the field of interpretation, including Enos Mills and Esther Burnell at Rocky Mountain National Park, and Milton Skinner at Yellowstone National Park, should be credited with discovering and developing many of the routine interpretive techniques and methods that we take for granted today. Likewise, in Canada, various individuals became noteworthy for developing and promoting sound interpretive methods and techniques, starting with the renowned naturalist Grey Owl, who initiated interpretive programs and activities at Riding Mountain and Prince Albert National Parks.

From experimental beginnings at national park areas in the United States and Canada, early ranger/warden naturalist programs were developed from a blending of academic expertise and field knowledge with advanced communication skills. The devotion displayed by these initial "interpreters" led to the celebrated axiom still touted today: *through interpretation, understanding; through understanding, appreciation; through appreciation, protection.*

The present mission to interpret critical natural resource conservation issues is surprisingly similar. By skillfully blending appropriate communication techniques with current scientific findings, it may once again be possible to fend off significant threats to our national parks, as well as to the environment at large. Such actions encourage understanding and support for resource management activities, and where necessary, promote changes in human behavior that would otherwise adversely affect critical natural resources.

The challenge today, as it was in the past, is to match the most appropriate method of delivery with the audience most in need of receiving it.



Grey Owl's cabin on Beaver Lake Lodge, Riding Mountain National Park, Manitoba

Time-honored Guidelines for Promoting Effective Interpretation:

Principles from the past are still valid today

When asked, “Why do we have national parks?” James B. Harkin, the first Commissioner of Canadian National Parks between 1911 and 1936 responded:

National Parks are maintained for all the people—or the ill that they may be restored, for the well that they may be fortified and inspired by the sunshine, the fresh air, the beauty, and all the other healing, ennobling, and inspiring agencies of Nature.

National Parks exist in order that every citizen of Canada may satisfy a craving for Nature and Nature’s beauty; that we may absorb the poise and restfulness of the forests; that we may steep our souls in the brilliance of wild flowers and the sublimity of the mountain peaks; that we may develop in ourselves the buoyancy, the joy, and the activity we see in the wild animals; that we may stock our minds with the raw materials of intelligent optimism, great thoughts, noble ideas; that we may be made better, happier and healthier.

Interpretation has always sought to enable park visitors to find inspiration or meaning from their surroundings. A wide range of interpretive guidelines have been established for that purpose. In his handbook, *Interpreting for Park Visitors*, Dr. William J. Lewis noted the foresight that was evident in developing interpretive guidelines in the early days. Lewis cited a series of goals prepared by Dr. Harold C. Bryant and Dr. Wallace W. Atwood, Jr., of the U.S. National Park Service Education Division in 1932. Their goals were to establish:

- 1. Simple understandable interpretation of the major features of each park to the public by means of field trips, lectures, exhibits and literature.*
- 2. Emphasis upon leading the visitor to study the real thing rather than to utilize secondhand information. Typical academic methods are avoided.*
- 3. Utilization of highly trained personnel with field experience, ability to interpret to the public the laws of the universe as exemplified in the parks, and ability to develop concepts of laws of life useful to all.*
- 4. A research program which will furnish a continuous supply of dependable facts suitable for use in connecting with the educational program.*

In the 1950s, Freeman Tilden, noted author of *Interpreting Our Heritage*, developed six principles of interpretation that are pertinent today. Briefly, they are:

1. *Any interpretation that does not somehow relate what is being displayed or described to something within the personality or experience of the visitor will be sterile.*
2. *Information, as such, is not interpretation. Interpretation is revelation based upon information.*
3. *Interpretation is an art which combines many arts.*
4. *The chief aim of interpretation is not instruction, but provocation.*
5. *Interpretation should aim to present a whole rather than a part.*
6. *Interpretation addressed to children requires a separate program.*

In the first edition of *Interpreting Our Heritage*, Tilden referred to an even earlier source of guidance. He noted that in 1928, U.S. National Park Service Chief Naturalist Ansel P. Hall made the following observations about how “neither the function nor the aim of interpretation should be purely to promote instruction. Remember always that the visitor comes to see the Park itself and its superb natural phenomena, and that the museums, lectures and guided trips afield are but a means of helping the visitor to understand and enjoy these phenomena more thoroughly...” Hall wrote, “The visitor must be stimulated to first want to discover things for himself, and second, to see and understand the things at which he looks...”

The Canadian Parks Service/Parks Canada recently drew from its own past to identify skills needed to serve as an effective interpreter. The skills include the ability to:

- *Analyze audience needs, expectations and perceptual capabilities*
- *Translate complex information into concepts and language which are immediately relevant and comprehensible to the visitor*
- *Adjust speaking style (vocabulary, gestures, etc.) to the audience, depending upon group composition, age, interest, prior knowledge, size of group, time available*
- *Articulate clearly and accurately, in an animated fashion, using grammatically correct language*
- *Organize and deliver a variety of public programs*
- *Use site resources effectively in relating heritage messages*
- *Respond effectively to visitor’s questions, and to assess the effectiveness of the response in satisfying the visitor.*

Most, if not all, of these skills are essential today for interpreting critical natural resource issues. However, several additional factors should be taken into consideration.

Critical resource issues generally deal with resource problems and their need for solutions. Beyond inspiring the visitor and fostering appreciation, critical resource issue interpretation often requires that changes in attitude as well as adverse resource behavior must take place to bring about successful results. When dealing with critical resource subjects, methods must be developed to foster or provoke audience receptivity and promote effective actions and results.

Key Considerations for Interpreting Critical Natural Resource Issues:

Critical natural resource issues focus on problems and their solutions, and frequently require additional levels of treatment beyond the goals and objectives of traditional interpretive topics



Traditional park values—open space, the opportunity to engage in outdoor activities, and the ability to “get close to nature” are but a few of the basic values that are, and always will be, important and deserving of interpretation. Likewise, specific park resources, such as plants and animals, mountains, and bodies of water, represent values that deserve independent recognition and interpretation.

In addition to these basic values, other considerations need to be addressed publicly. The amount of available wilderness and unspoiled land is diminishing. Only recently have we recognized that even our biggest park areas are not large enough to sustain ecosystems that are entirely independent of human-related influences.

In the past, the mission of the interpreter was mainly to foster an appreciation and understanding of basic park values, which in turn, would lead to public protection of them. Today, the interpreter must also address environmental threats and other problems inside and outside park boundaries.

In order to effectively interpret such critical natural resource issues, four key determinations need to be made from the onset:

- (1) What is the issue?
- (2) What is the message that needs to be conveyed?
- (3) What is the most appropriate audience that needs to be reached with the message?
- (4) What is the most appropriate technique for delivering the message?

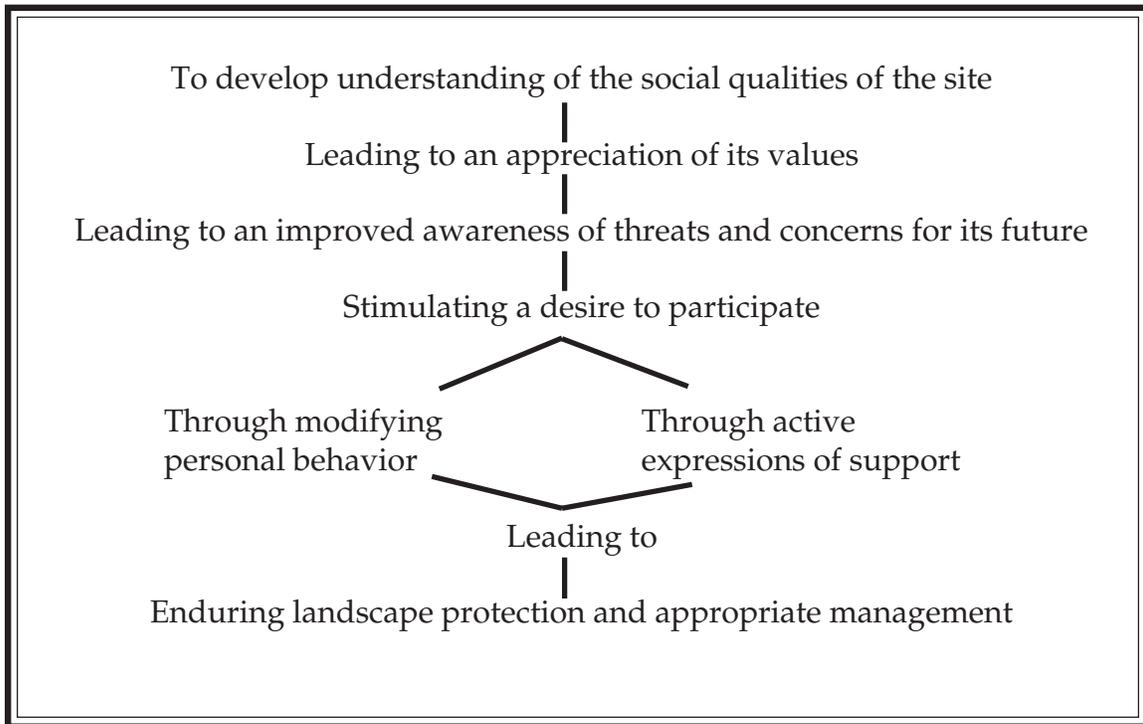
These four determinations coincide with similar strategies identified by previous researchers. Within the U.S. National Park Service, early proponents of this type of approach include Dr. Gary Mullins of the Ohio State University School of Natural Resources and Dr. John Peine, Chief Scientist at Great Smoky Mountains National Park in the 1980s. In several reports based on studies conducted to evaluate the effectiveness of communicating environmental issues relating to Great Smoky Mountains National Park, Mullins and Peine cite the need to determine and address proper target audiences with proper techniques. In *Interpreting Man and Biosphere Concepts in U.S. National Parks: A Case Study*, distributed in 1987, they proposed the following format for communicating with the public:

1. *Identify general reserve management issues where the public can play a legitimate role.*
2. *Develop specific message objectives on the issue, and incorporate perspectives from the community, visitors, and reserve management into the definition of objectives.*
3. *Analyze the clientele's economic and social structures to identify the orientation of vested interests, categories of networks, and individual leaders concerning each issue, public interest, and behavior.*
4. *Select target audiences for specific messages.*
5. *Design specific programs and media applications to cost effectively link the messages to target audiences and receive feedback.*
6. *Program and implementation phase.*
7. *Analyze the effectiveness of the messages and programs in meeting the intended message and objectives.*

In the United Kingdom, Timothy O'Riordan, Dr. Christopher Wood, and Ann Shadrake made a related observation in their report, *Landscapes for Tomorrow: Interpreting Landscape Futures in the Yorkshire Dales National Park*, published in 1992. They wrote:

The term issue specific interpretation has come into vogue. The rationale has been that at a time of great uncertainty in terms of worldwide environmental sustainability, interpreters have a duty to throw their lot in with other specialists and use their powerful skills to resolve outstanding problems.

Their report offers the following diagram for organizing interpretive presentations dealing with resource issues, and, as stated, "to take visitors beyond the level of simply understanding the issues:"



The Canadian Parks Service/Parks Canada has made similar findings. In a focus group study conducted in 1991 by Dan Aronchick, some interesting observations were made. In the study, audiences selected for evaluating the effectiveness of environmental messages were broken into various categories, including passionate environmentalists, moderate environmentalists, and concerned observers.

Highlights from the study indicate that these groups frequently need different approaches and different levels of contact in order for environmental messages to be received effectively. To be successful in this arena, the report suggests that environmental programming be “targeted by segment and desired outcome.”

Canada’s Green Plan, the national environmental action plan published by the Canadian Department of Environment in 1990, offers a broad but related sequence for promoting “environmental citizenship.” Key steps are:

- *campaigns designed to enhance environmental awareness and promote public participation;*
- *development of learning materials and programs designed to promote understanding and motivate informed decision making at all levels of society;*
- *development and implementation of environmental action and training plans appropriate for specific target audiences; and*
- *support for partnership activities designed to enhance general environmental awareness and increase understanding of specific issues.*

At the field level in Canada, other related approaches have been adopted. Communication Specialists Janet McGinity and Bruce Rickett from the Canadian Parks Service/Parks Canada Atlantic Regional Office used the following format to review the effectiveness of environmental message communications with the public, made by field interpreters at Terra Nova National Park in 1992:

- *What is the environmental issue, and why is it an issue?*
- *How does this issue affect our environment?*
- *Are there illustrations of the issue in the national park?*
- *If so, how is the park remedying or studying the situation?*
- *What action can individuals take to remedy the situation, both within the park and in their own environment?*

McGinity and Rickett also surveyed nonpersonal media, VCR presentations, and partnership possibilities for further potential to integrate environmental messages. In the Western Regional Office of the Canadian Parks Service/Parks Canada, a somewhat different format for promoting resource messages was proposed in a document also released in 1992 entitled, *Environmental Citizenship Discussion Paper*. It suggested using a scientific method which would allow for management hypotheses to be tested against appropriate performance indicators. The report provided the following resource issue as a case example for using communications as a tool to reduce trampling (by people) of subalpine meadows in Mount Revelstoke National Park.

Management Problem: Destruction of subalpine meadows caused by trampling. Clearly non-sustainable.

Proposed Management Actions: Implement a public communications programme as an experiment to test methods of changing visitor behaviour.

Management Hypotheses: 1) That as a result of public communications, visitor trampling will be significantly reduced; 2) That nonpersonal public communications are as effective as personal methods; and, 3) That public communications can result in sustainability of the subalpine meadows.

Methods: During one summer, sample behaviour under five communications strategies (no communications, two types of nonpersonal, two types of personal). Use percentage of time hiking off-trails as an indicator.

Results: 1) Trampling behaviour during both nonpersonal and personal communications programmes was significantly less than during periods with no communications; 2) The two personal communications methods were significantly more effective than the two nonpersonal methods tested; and 3) The linkage between reduced trampling and sustainability remains untested.

Adaptive Feedback: 1) Public communications can significantly reduce trampling of the meadows; 2) Personal contact methods may be more effective than nonpersonal methods to affect behaviour change; and, 3) Another experiment linking vegetation condition and percentage of time spent in offtrail hiking is required to test the hypothesis that the reduced level of trampling will result in a sustainable subalpine meadow ecosystem.

In the United States, a report issued by the U.S. Forest Service in February 1993, *Wilderness Visitor Education: Information About Alternative Techniques*, by Joseph E. Doucette and Dr. David N. Cole, provided even closer parallels to the four-step process described initially. It is based on a ten-year review of the effectiveness of educational programs designed to address wilderness impact generated by visitors. A main conclusion of this study is that “many wilderness problems are primarily a result of inappropriate behavior. Inappropriate behavior can be changed through education.” The report further notes that “targeting is one of the most important principles of effective education.” Doucette and Cole also cite the work of Kristen Meyers and Susan Thomas in their 1991 report, *Designing Your Wilderness Action Plan*. A four-step process proposed by Meyers and Thomas included:

1. *Identify the problem*
2. *Identify the target audiences*
3. *Develop a program of educational techniques*
4. *Implement and evaluate the program*

The authors further divided step 3 above into five subunits:

1. *Define goals and objectives*
2. *Design messages to reach target audiences*
3. *Select appropriate channels for disseminating messages*
4. *Decide on evaluation strategy to assure success, and*
5. *Record all the steps in an action plan*

All formats described so far identify key needs for designing and presenting effective environmental issue communications. They are reinforced by an additional four-step strategy, set forth in the U.S. National Park Service Incident Command System, for communicating with the public during emergency situations. These steps include:

1. *Identify the audience*
2. *Determine what the desired behavior or outcome should be*
3. *Determine what messages will enact the desired outcome*
4. *Identify what tools and techniques will best get the message across*

The report by Mullins and Peine, however, warns that “the most important element is that communications is a two-way process. At best it is a dynamic, interactive process...clearly there is a danger in listing a process as a series of steps. The steps are not mutually exclusive, but rather highly integrated. They are all interdependent, making for a dynamic process.”

Keeping these concerns in mind, the four key determinations listed initially in this section (*What is the issue? What is the message that needs to be conveyed? What is the most appropriate audience that needs to be reached? and What is the most appropriate technique for delivering the message?*) seek to incorporate major communication considerations and interconnections while addressing specific national park critical resource issues. This format evolved from extensive field and central office discussions and through training and information presentations conducted with Canadian and U.S. National Park Service personnel between 1987 and 1993. In more detail, these four determinations incorporate the following steps:

Step 1. Identifying the Issue

Critical natural resource issues may be identified in a number of ways. Most often they are recognized through careful study by natural resource scientists or field resource managers.

Within the Canadian and the U.S. park services, each park has a resource management or resource conservation plan, which identifies park resource problems and needs. Individual problems are further described within these plans, which attempt to identify all potential natural resource issues.

Likewise, critical resource issues generally involve subjects that possess traditional park values (for example, unique character, beauty, rarity, ambience) in addition to the problems they face. Because of these intrinsic values, resources affected by critical issues still benefit from traditional interpretive methods and techniques. To be interpreted effectively, critical resource issues also require recognition of the features or factors that take them beyond traditional park values. The first step is to determine clearly what the issue is that needs to be addressed. Past surveys of U.S. National Park Service areas identify the following as prominent critical natural resource issues:

- *Exotic plant and animal eradication programs*
- *Endangered species protection activities*
- *River and pond habitat maintenance*
- *Prairie habitat maintenance programs*
- *Fire management activities*
- *Bear management programs*
- *Native animal reintroduction*
- *Natural revegetation programs*
- *Water quality policies*
- *Air quality initiatives*

Specific issues within these sample categories differ from area to area. Some adverse influences, unfortunately, may also have been caused by inappropriate past management practices (such as predator reduction programs, excessive fire suppression, or unwise bear-feeding activities). Other issues have been caused by external factors. The individual nature and scope of an issue must be identified before trying to proceed with its resolution.

Some issues obviously have a local focus. Wildlife road kill problems on certain roadways, unique habitat restoration needs, and local negative human-wildlife situations are but a few examples. At the other end of the spectrum are broad-scale environmental issues that affect every park system-wide. The Canadian Parks Service/Parks Canada is involved in a campaign to provide environmental messages to the public about five different broad-scale environmental issues or goals. These areas of focus are: *Waste, Fresh Water, Atmospheric Change, Spaces and Species, and Environmental Citizenship*.

Identifying an issue and its focus enables the next steps for seeking resolutions through effective interpretation. By doing so, the appropriate messages, target audiences, and interpretive techniques can be determined more readily.

Step 2. Determining the Message

Determining the message also determines the extent of interpretation needed. What is the most desired message that needs to be conveyed regarding the identified issue, and what is its purpose? Is it to gain support? To change behavior? To simply inform? To inspire and instill appreciation? All of these goals are valid within their appropriate realm, but determining which is most appropriate regarding the message in need of being conveyed is particularly important.

Different issues require different levels of acceptance, understanding, or response from the public for resolution. Some natural resource issues may need only a general understanding or passive support of management actions. Other issues may require significant changes in attitude or behavior by specific individuals or user groups, and the linking of local issues with global ones. By determining the level of action that is needed to help resolve an issue, the field manager can also determine the objectives of the message. Here are three examples with increasing degrees of public involvement:

(1) Issues that would benefit from enhanced public understanding.

While some natural resource issues are relatively passive, others may be more controversial because of their perceived deviation from traditional (or previously accepted) resource management practices. Examples include allowing lightning-caused fires to burn, or the policy of removing aesthetically “attractive” but biologically detrimental nonnative plant or animal species. Resource management activities surrounding these issues frequently need varying degrees of explanation to be understood and accepted by the public. Otherwise, such practices may be seen as contradictory to the established purposes of a park (and may undermine public, and possibly even legislative, support). Posters, flyers, or other general presentations may be all that is needed in such cases. These messages need to be kept up to date.

(2) Issues that would benefit from significant changes in widespread public attitudes or opinions.

Some critical resource issue solutions may run counter to popular or widely accepted public opinion. For example, a lack of understanding created strong public opposition to burro reduction activities at Grand Canyon National Park. People empathized more with the exotic burros than with the native plant species being adversely affected. A similar issue exists with the culling of white-tailed deer at Point Pelee National Park, in Ontario, where the deer threaten the remaining Carolinian forest preserved by the park. Interpretive programs and activities addressing controversial issues must go beyond developing understanding and appreciation of the resource. They must also address the complexity of the issues affecting the resource and the need to select the most desirable alternative for resolving specific critical resource problems.

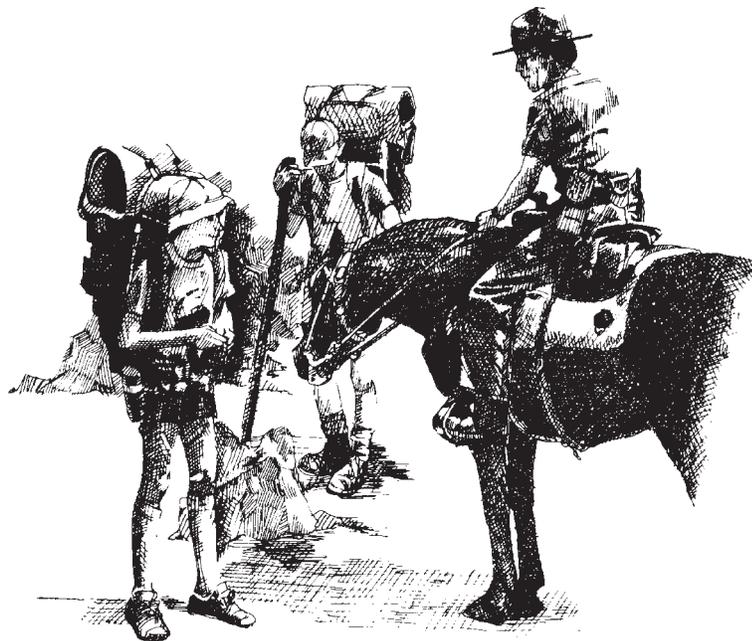
Interpretive activities need to foster an understanding and acceptance of resource management activities, and if necessary, promote changes in public opinion to gain support for the reasons why specific resource management actions are selected over others. The greater the public misunderstanding, the greater the lead time needed to turn around attitudes and gain support.

(3) Issues that would benefit from direct changes in individual human behavior.

A number of critical resource issues require direct human behavioral change, in addition to attitude changes, to be successfully resolved. Examples include closing certain hiking or camping areas in order to reduce human-bear encounters, or shutting down popular sections of a trail to reduce erosion. Likewise, some broad-scale environmental issues, such as air quality and water quality, may ultimately require the mitigation of external human activities outside park boundaries. Issues within this category require comprehension of complex concepts leading to changes in human behavior. Objectives for interpretive activities should identify the desired changes up front. Interpretive presentations must be convincing, direct, and avoid being didactic and negative.

There are scenarios with different issues and different message needs. The gap between the level where the public supports, or fails to support, preferred management actions is important to identify.

A Canadian Parks Service/Parks Canada issue paper on implementing the delivery of environmental messages concluded that “interpretation and the use of balanced information persuades people, primarily through hands-on personal experiences, to change their behaviours and attitudes. Materials supporting this kind of interpretation will be part and parcel of the help all the (environmental message) campaigns want to provide.”



Step 3. Targeting the Message at the Appropriate Audience

When addressing critical natural resource issues, the presentation or method of delivery needs to be targeted at specific audiences or user groups to achieve the desired results. A common pitfall is to use too limited an approach, such as presenting an extremely technical program to a general audience. It may provide a false sense of security by reaching only a handful of ardent supporters, while actually driving away others due to lack of appeal or understanding.

Such presentations may be valuable if they promote a multiple effect—if the ardent few spread the word to a multitude. But studies conducted by the Canadian Parks Service/Parks Canada suggest that the general public considers park service personnel as “extremely credible information providers.” Therefore, we should ensure that important messages are presented directly by park personnel, rather than relying on other people to do the job.

Preaching to a small assembly of the convinced may fulfill the ego of an individual presenter, but this approach may do little to maximize broad-scale significant results. To put it another way, big problems need big solutions, not small satisfactions.

With many critical resource issues, the selected interpretive presentation should be designed to meet the needs or interests of the most appropriate target audience (the audience that needs to be reached to obtain satisfactory issue resolutions). For example, broad-scale issues (such as global warming) may require getting the message out to large, widely diversified audiences. On the other hand, specific local issues may benefit from reaching a relatively small target audience (which in turn can resolve the issue by simply changing local behavior).

Jasper National Park, Alberta, is addressing broad-scale resource concerns about global warming by setting up exhibits along the Icefield Parkway. These exhibits are viewed by thousands of visitors annually. Cape Hatteras National Seashore, on the other hand, had a problem with sea turtles not laying their eggs because of human interference. After several unsuccessful attempts to broadcast this message on a widespread general park visitor basis (through campfire talks, etc.), the park found that providing information simply and directly to local community residents (by postcard) improved the situation almost immediately.

Often, the best approach in dealing with critical resource issues is to use a variety of interpretive techniques that reach various audiences at different levels. Take, for example, the following natural resource issue at Cape Cod National Seashore regarding freshwater pond quality. Four different freshwater audiences were identified, with different techniques selected for each audience:

Memorandum:

To: Superintendent, Division Chiefs, District Rangers, and Staff in Attendance

From: Supervisory Resource Management Specialist

Subject: Summary of Meeting on Kettle Pond Interpretive Activities

A number of educational activities have been suggested to enhance visitor and local resident appreciation and understanding of the Kettle Ponds.

1. Resource Message Panel or Natural Resource Education Sign: This sign would be similar in layout and design to the "Dune Damage" sign now in use at Golden Gate National Recreation Area. The sign would be used to increase on-site awareness.
2. Pond Specific Site Bulletin: This brochure would be targeted at visitors at the ponds and would complement the resource message panel described above. This bulletin would include information about kettle pond threats and actions for public involvement to protect pond water quality.
3. Generic Pond Poster: This interpretive tool would focus on building a constituency and better awareness for our kettle pond management efforts. It would be specifically targeted to reach the public before they get to a pond. These posters would be distributed at key locations where people congregate (libraries, bars, grocery stores, post offices, liquor stores, etc. We would also be working in local schools and would have kids draw/develop posters about kettle ponds as important habitats, etc.
4. Pond Update Newsletter: A direct mail newsletter should be sent to all pond area residents. The goal of this newsletter would be to increase local residents' understanding about the pond environment and to enlist them as partners in our monitoring program.
5. Direct Mail Postcard: The group also felt that a postcard mailed to all outer Cape residents would be an effective way to convey a very specific natural resource message and affect behavior changes from those members of the public likely to visit the ponds. A direct mailing has been used at Cape Hatteras to solicit help in protecting nesting sea turtles. Our concept would be as follows: a short message about the glacial origin and high water quality and clarity of the ponds, and how the public can assist in preventing pollution of these waters by not bathing with soap and detergents, not rinsing off after swimming in the ocean, by using designated bathroom facilities, and keeping pets at home. The purpose of this technique would be to reach individuals with pertinent information (in a nonthreatening way), so that they would be more supportive and understanding of management policies.

In review, determining the target audience is an essential step for interpreting critical natural resource issues effectively. As with all other forms of interpretation, programs addressing critical resource issues need to clearly identify desired outcomes. These considerations can be accomplished in part by establishing broad mission goals as well as more refined and measurable program objectives.

In certain cases, the target audience will be large, perhaps regional, national, or even international (such as in the case of air quality issues). In other cases, the most appropriate audience will be local park users or neighbors. The Canadian Parks Service/Parks Canada has recently obtained market information from independent consultants who assess audience reaction to disseminating environmental messages. Their findings reveal a high degree of support (48%) from Canadian citizens for resolving environmental issues. The report also notes that a significant number of individuals (14%) do not care, or are opposed to such concerns.

But individual critical resource issue programs may need to reach both supporters and nonsupporters. In seeking real solutions, the most appropriate target audience should not be missed by unwittingly delivering the message to a more convenient or traditional audience.

Two interesting examples of designing critical resource interpretation for specific target audiences come from the Canadian Parks Service/Parks Canada Atlantic Region. The sand dunes of Prince Edward Island National Park are sensitive to foot traffic. The park is popular with family groups, so a coloring/story book titled, *The Great Aeolian Dune Story*, is distributed. The book features a character named *Mr. Sand*. The illustrations and text tell how sand dunes are naturally formed, and how they are sensitive to human impacts, especially foot traffic.

The North Mountain construction project of the Cabot Trail, leading into and through Cape Breton Highlands National Park, required major road delays for periods of 15 minutes or greater. Temporary bypass surfaces would have increased environmental damage. To avoid motorist frustration, an innovative array of interpretive activities was arranged at vehicle holding points, including a live bagpipe player in Scottish attire, and an interpreter handing out an information/activity flyer. The flyer was designed to provide messages on reasons for the delays, as well as environmental issue concerns. Frequently, the onsite information was so interesting some people wanted to stay when traffic was allowed to proceed. A section of the flyer reads:

We hope this flyer will inform and entertain you while you wait. Use the Cape Breton Highlands National Park map, this flyer, and other Park materials to answer the Just For Fun Quizz. You'll discover interesting facts about the area and some Highland history. Look for tips about how to protect your environment! You'll be surprised at how much there is to see, hear, and learn along the way.

Step 4. Determining the Most Appropriate Techniques for Interpreting Critical Resource Issues

All too often, critical resource issue interpretive programs have failed, or have been ineffective, because the inappropriate technique was used. For this reason, a range of techniques should be surveyed before making the final choice. Likewise, a mix-and-match approach (that uses several interpretive techniques simultaneously) may be effective.

In a U.S. Forest Service study, *Wilderness Visitor Education: Information About Alternative Techniques*, prepared by Joseph E. Doucette and Dr. David N. Cole in 1993, 24 prominent interpretive techniques or methods were identified:

<i>brochures</i>	<i>personnel at school programs</i>	<i>guidebooks</i>
<i>personnel at agency offices</i>	<i>slide shows</i>	<i>interpreters</i>
<i>maps</i>	<i>personnel at campgrounds</i>	<i>computers</i>
<i>signs</i>	<i>personnel at public meetings</i>	<i>commercial radio</i>
<i>personnel in backcountry</i>	<i>personnel at visitor centers</i>	<i>commercial periodicals</i>
<i>displays at trailheads</i>	<i>videos</i>	<i>movies</i>
<i>displays at agency offices</i>	<i>agency periodicals</i>	<i>commercial TV</i>
<i>posters</i>	<i>displays at visitor centers</i>	<i>agency radio</i>

Twenty-seven similar examples, gathered from Canadian and U.S. national park areas, are identified later. Interpretive techniques within these lists can generally be separated into two basic groups—active and passive. Active programs denote personal or animated presentations, such as guided walks, talks, slide shows, video presentations, and the like. Passive programs generally refer to nonpersonal media devices, such as signs, exhibits, and publications. Each of these techniques has its own individual strengths and weaknesses. But they all benefit from similar developmental enhancements and guidelines, especially when used to interpret critical resource issues. A summary of five important enhancement considerations follows:

(1) Select a theme.

A theme—a *central idea, around which a program revolves and from which it evolves*—is an effective way to instill or provoke interest in a subject. A theme is the key idea of any presentation, the unifying thread that weaves continuously through the program. Themes can draw relationships from other subject areas, similar to the use of parables or analogies, to fill out a story and make it more interesting. In interpreting critical natural resource issues, themes broaden narrow subject issues (or narrow broad issues). They can also be used as a mechanism for building relationships between the audience and the subject. They should be flexible.

Parks within the Atlantic Region of the Canadian Parks Service/Parks Canada have been experimenting with using broad-scale environmental themes to tie major environmental issues into traditional interpretive programs. Guided walks are being designed to focus on how “changes elsewhere affect everywhere.” Thus, selected park settings and features are being used to exemplify the effects of global warming, wildlife migration patterns related to rain forest depletion, ozone depletion, etc., and how these conditions affect all individuals and resources in North America.

A thematic statement from Canada's national *Green Plan* in 1990 has noteworthy parallels:

For the health of our environment and economy, we must use the environmental resources efficiently. All are limited in some way. We must value them at their true worth and use them frugally, so that we live off the interest without depleting the capital.

(2) *Use goals and measurable objectives.*

Goals are guidelines for directing what the overall accomplishments of a program should be. Goals are broad concepts. Often, the achievements of goals are not easily measured. Goals reach for long-term influences that are generally fulfilled in the future rather than immediately. Goals often strive to inspire, instill appreciation, or foster understanding.

Goals are important considerations when designing programs addressing critical natural resource issues. They are extremely helpful in determining what the message should be, or in what direction programs or activities should be headed. They are often conveniently defined as "statements of desired futures." A goal of the Canadian *Green Plan* has been to make Canada "the most environmentally friendly country in the world."

Objectives, on the other hand, focus on measurable or observable results. Generally, they can be readily evaluated. They help to guarantee that the program has been presented effectively. When properly written, objectives recognize specific measurable results. They can be helpful in evaluating the effectiveness of programs striving to increase audience awareness, as well as those desiring to directly change behavior. For example, two separate program objective statements may read:

At the end of the presentation, participants will be able to identify two nonnative plants growing along the trail. Furthermore, they will be able to describe one or more adverse effects that these nonnative plants have on native species located within the park.

After reading the resource panel located at the edge of the pond, visitors will be able to identify several adverse effects that pets and humans impose on ponds, and as a result, they will leave their pets at home and use portable restrooms located away from the water's edge.

(3) *Assure relevancy.*

Regardless of the program or medium selected, to be effective the delivery needs to be relevant to the specific audience. Most critical natural resource issues are initially recognized and described by natural resource scientists or others with advanced academic credentials. Frequently, however, the audience the message will be targeted at will not be well-versed in scientific terms or complex analytical assessments. Prominent Rocky Mountain naturalist Enos Mills noted in the 1920s, "The nature guide is at his (or her) best when he (or she) discusses facts so that they appeal to the imagination and to the reason, give flesh and blood to cold facts, and make life stories of inanimate objects."

The key to resolving this matter is finding ways to combine current scientific conclusions with effective communication techniques. There are four important factors to take into account:

Write for target audiences. Scientific writing, by design, requires extensive verification of facts and documentation of findings. The writing, however, can be very hard to follow. In the preface of the 1957 edition of Freeman Tilden's book, *Interpreting Our Heritage*, Christopher Crittended, a prominent scholar, joked about relating "technical" information to the common person:

*...many professional historians and other scholars twenty, forty, or sixty years ago...sought to become more and more scientific in their research and writing, with the result that their publications had tended to become more and more abstruse. Their works came to be filled with tremendous numbers of footnotes, and it had almost reached the point where the **summum bonum**, the ultimate, in scholarly achievement was to produce a page that contained only one line of text while all the remainder was filled with one or more erudite footnotes. The scholar, indeed, seemed to care less and less whether the products of his research were intelligible to anyone except a few other scholars.*

Many internal scientific reports are so technical in nature that they can only be comfortably deciphered by fellow specialists. The Western Regional Office of the Canadian Parks Service/Parks Canada in Calgary, Alberta, has recognized this concern. This matter has also been recognized at other locations within the Canadian and U.S. park systems. There is an ongoing effort to assure that resource management reports are accompanied by a common language summary. The Assistant Chief of Interpretation at Yellowstone National Park has had the responsibility for bridging scientific and resource management activities by preparing common language summaries of various scientific reports. At Everglades National Park, position descriptions for supervisory interpreters note that the incumbent "translates research studies, technical reports...on management of natural and/or cultural resources into everyday, understandable language for park visitors." The U.S. National Park Service publication, *Park Science*, also presents numerous resource issues in a popular way.

The Countryside Commission of Scotland made the following observation:

The aim of all writing, no matter what the subject, length and intended readership, is to get attention and hold it to the end. Persuasion depends on vividness of presentation and upon discovery of common ground between you and the audience.

George W. Johnson, in his essay, "Engineers Can Write—Here's How," says: "How often one finds examples of gobbledygook! 'The efficacy of hydrochloric acid is indisputable, but the corrosive residue is incompatible with metallic permanence.' Why do we write such sentences, when we could more easily have written: 'Hydrochloric acid destroys the pipes'."

When considering script writing, or narration drafting, the U.S. National Park Service Branch of Audiovisual Services in Harpers Ferry, West Virginia, suggests:

*Effective **writing for the ear** requires more skill than writing for publication or reading. Listeners should be able to "keep up" with what they hear without putting forth special effort. Readers can stop and ponder if they so desire; this is not possible for listeners—the recording (or narrative) goes right on.*

Examples of good popular treatments of various natural resource topics can be found in films and publications produced by such organizations as the National Geographic Society, Audubon Society, the Smithsonian Institution, and the National Film Board of Canada. The key is clarity and simplicity. Noted naturalist John Muir left us with the following observations:

Nature saw to it that besides school lessons and church lessons, some of her own lessons should be learned.

I was only leaving one university for another, the Wisconsin University for the university of the wilderness.

In drying plants, botanists often dry themselves. Dry words and dry facts will not fire hearts.

Relate to the area's purpose or mission. In park areas set aside primarily for their cultural features, present natural resource concerns should be correlated with past human activities. Many cultural resource areas have stories that are historically linked to significant natural features, processes, or events. Thomas Edison and George Washington Carver both experimented with natural plant materials in order to produce new goods and products. Alexander Graham Bell, Marconi, and the Wright brothers all took advantage of natural features to enhance their experimentation. The Forks National Historic Site at Winnipeg represents how the convergence of rivers also became a meeting ground for many different cultures. Numerous military sites, such as Signal Hill which safeguarded the Grand Banks fisheries, and various fur trading post sites located in the Northwest, were directly linked with topographical or other natural features.

Combine resource themes. Because many cultural resource sites contain significant amounts of "protected landscapes," it is sometimes tempting to ignore the historical significance of these areas, and talk instead about current natural resource issues independently. Generally, however, a stronger message can be delivered by linking past activities with current situations.

For example, at Morristown National Historical Park, managing excessive deer populations is a current natural resource issue; however, when George Washington and the Continental Army camped there during the winter of 1779, this situation was reversed. The deer population was smaller then, not because of hunting, but because of the lack of habitat. A powerful and interesting story lies within these differences.

Author, botanist, Gary Nabhan makes an equally profound suggestion in his book, *Enduring Seeds*. In remarking about preserving Native American aqueduct features in the Southwest, Nabhan states that there is a potentially larger mission:

But let us remember that centuries ago, this irrigation system provided grain and beans and fish for the bellies of people. It would be a hollow kind of historic preservation if sixty-day flour, corn, tepary beans, and humpback suckers became extinct while the earthen walls of the ancient ditch were preserved as public monuments. Let us not overlook the monumental contributions of the crops far more ancient than the discovery of this continent, foods that still have the power to nourish us. We must keep them alive.

Cultural considerations deserve recognition when interpreting critical natural resource issues. They may well be the connection needed to make a presentation more relevant or interesting to the intended audience.

Tell a compelling story. Connie Rudd, Chief of Interpretation for the Rocky Mountain Region of the U.S. National Park Service has been a key promoter for the value of presenting "compelling stories." She noted:

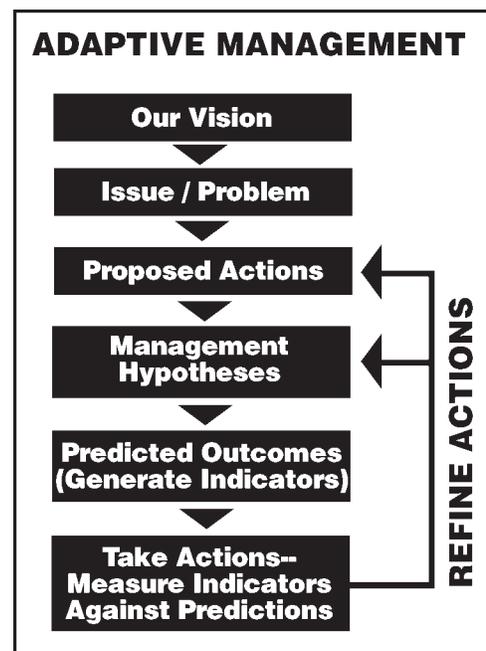
Interpretive excellence is not based solely on academic research. Subject matter expertise is an important foundation, but it is the knowledgeable and skilled communicator who wields irresistible power through interpretation. By identifying and delivering the compelling stories, interpreters enable many different people to reexamine their own values and understand why these stories and resources are important. Good interpretation is not a walking lecture in the woods. Good interpretation has relevance. It motivates listeners to action. The message becomes theirs, not ours.

The means of developing a compelling story follows the process of first reviewing an area's tangible resources, including objects, places and events. Next comes considering how these resources are connected to larger concepts, such as *processes, systems, ideas, or values*. This helps the recipient of the story forge emotional and intellectual ties with the resource or issue being presented. Compelling stories need not be long. They seek to tell the whole, as opposed to part. Environmental advocate Marjorie Stoneman Douglas accomplished this in her statement, "The Everglades are a test. If we pass the test, we get to keep planet earth."

(4) Evaluation.

Evaluation is an important component when interpreting critical natural resource issues. Sociologist Gary Machlis, editor of the book, *Interpretive Views*, points out that there is a wide diversity of opinion on the scope and purpose of interpretative evaluation. In Machlis' words, "the dilemma of how to evaluate interpretation in the National Park Service revolves around the definition of what interpretation is supposed to be."

Since critical natural resource interpretation is a combination of traditional techniques and current problem-solving considerations, evaluation processes set up for either of these approaches can be used. Critical natural resource issue evaluation should consider such factors as relevance of the message to the audience, as indicated by attendance and other forms of feedback; observable improvements in public attitudes; and where appropriate, positive observable changes in resource related behavior. A Canadian Parks Service/Parks Canada flow chart offers a sequence for accomplishing this objective.



(5) *Develop an outline.*

Outlining is a form of organization that can aid significantly in preparing and delivering a critical resource issue message. The outline does not need to be complex, but should address all of the major considerations to make the program successful. In addition to program content, it should include title, theme, goals, objectives, target audience, duration or length, presentation techniques, and suggested forms of evaluation.

An outline of this format was designed for the U.S. National Park Service by the Ohio State University School of Natural Resources as a component of the Man and the Biosphere Program. The format has been successfully used to develop critical natural resource interpretive programs at Great Smoky Mountains National Park.

A similar outline concept for preparing environmental messages was developed for parks in the Atlantic Region of the Canadian Parks Service/Parks Canada. It centers around designated environmental themes, which have been established to aid the interpreter in inventorying and interpreting major environmental issues in the Canadian parks system. Ten themes have been summarized in a document known internally as the "Little Green Plan." Under Theme III, Natural Resource Management, four specific messages have been outlined: (1) *conservation of natural resources involves choices*, (2) *parks are for all people*, (3) *national parks are vulnerable*, (4) *national parks are living laboratories for field research*. Additional themes, with accompanying messages, deal with national parks conservation ethics, ecosystem diversity, soil conservation, water conservation, air quality, and oceans.

Interpreting *Critical Resource Issues*

in National Parks

Clearing the Air Series



Title:

Program Description:

Theme:

Goal(s):

Program

Objective(s):

Audience:

Suggested Evaluation:

U.S. National Park Service

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Identification of Environmental Messages for Canadian National Park Themes							
Park Theme							
Trail or site representing the theme	Type(s) of habitat	Out-standing Features	Environ-mental stresses and impact	Resource conserva-tion measures, e.g., Monitor-ing, interven-tion, Zoning	Appli-cable messages from Little Green	Potential audience	Type of program
Outline Interpretive Approach:							
Define outcome: What do you want visitors to Know /Do/Feel?							

A third, and even more closely related format to the four-step sequence described earlier, was developed by Mt. Rainier National Park. This simple outline addresses key elements needed in regard to using interpretive programs as management tools, specifically when dealing with critical natural resource issues.

Mt. Rainier National Park
Management Through Interpretation
Project Worksheet

Resource Area _____

Management Problem (issue) _____

Desired Outcome (audience/behavior) _____

Public Education Plan

Message to Convey to Users

Media (Technique) Used to Convey Message

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Packaging the Process

Determining critical resource issue messages relies on gaining sufficient data to identify issues and their complexity. Determining target audiences relies on being able to identify the scope of an issue and public actions needed to resolve it. Thus, the procedures needed to effectively communicate critical resource issues are interdependent. An orderly, step-by-step approach can simplify the procedure. A number of national park sites in Canada and the United States have achieved successful results by using the four-step process outlined on page 5. Here are examples from two parks:

Mount Rainier National Park draws several million visitors annually. One of the key attractions in the warmer months is the spectacular display of subalpine wildflowers. The park's approach to resolving the issue of subalpine meadow damage closely follows the four-step format:

What is the issue? Spring visitors to Mt. Rainier visit the easily accessible areas of Paradise and Sunrise. This concentrated use leads to offtrail travel, which causes severe damage to fragile native plants. Once vegetation is trampled and killed, the stage is set for erosion of both the thin loam topsoil and deeper soil layers.

What is the message? Humans must avoid trampling on the meadows. Centuries may pass before natural meadow processes can replace lost soil and heal erosional scars. In places where damage has been caused by offtrail trampling, the National Park Service is attempting to restore natural meadow conditions.

What is the target audience? Park visitors walking or hiking in meadow areas. A high percentage of park visitors do not speak or read English, and require special attention.

What are the most appropriate techniques? A meadow rove program was initiated at Paradise, using park volunteers. Volunteers were trained to contact and inform visitors onsite about resource concerns. A parallel program was established using park interpreters, wearing informal field uniforms. The objectives were to educate visitors of meadow damage problems, and to modify detrimental behavior. Another approach was to develop a series of handouts, in several different formats, with one printed in seven languages: Chinese, Japanese, Spanish, German, French, Korean, and English. A campaign entitled, "Stay on Trails—Don't be a Meadow Stomper," was initiated. This consisted of producing *campaign* buttons for personal distribution to visitors by park employees and volunteers (in 1993, 12,700 buttons were distributed). In addition, a meadow restoration display highlighted restoration activities, and an 18-minute resource management slide program titled, "Oh, What A Paradise!," was presented every afternoon at the visitor center during the summer season (with an attendance of just under 6,000 visitors for the season).

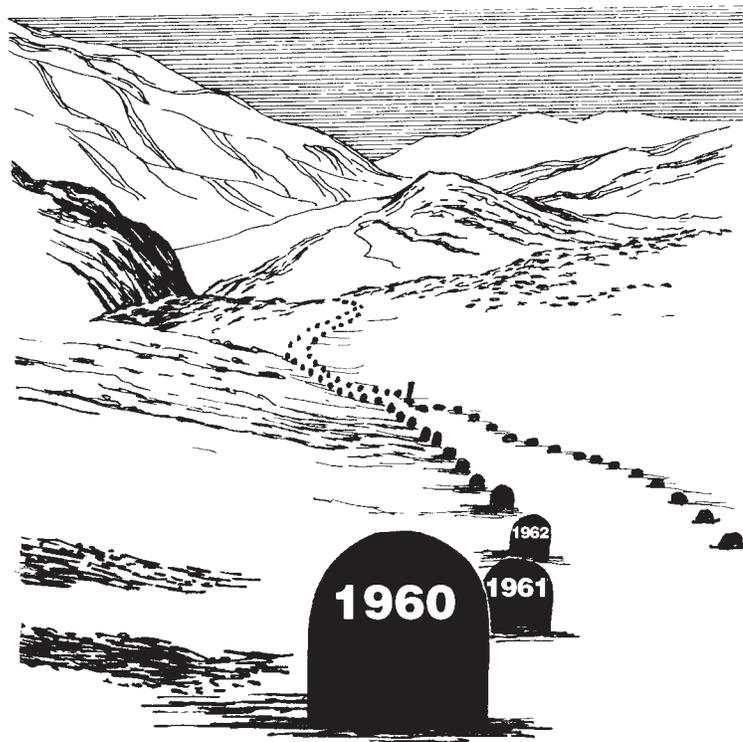
The Columbia Icefield in Jasper National Park, Alberta, is receding at an unprecedented rate. Scientific studies suggest that this is a prime example of the effect of global warming. The Canadian Parks Service/Parks Canada is responsible for promoting environmental stewardship, and the rapid retreat of the ice field is a transboundary issue. The four-step process has been applied to the following approach adopted by the staff at Jasper National Park:

What is the issue? The unprecedented retreat of the Columbia Icefield appears to have human-generated connections. Scientific studies suggest that global warming, caused by recent human industrial activities, may have profound effects on northern ecosystems.

What is the message? Rapid environmental changes often lead to major disruptions in established ecosystems. Observable, dramatic changes in the retreat of the ice front demonstrate unprecedented rapid climatic changes. Human activities are suspected of causing this situation.

What is the target audience? People from industrial nations worldwide. Consumers who can elect to select alternative approaches to how goods and services are produced and provided.

What are the most appropriate techniques? Onsite exhibits at the Columbia Icefield, seen by several thousand visitors weekly, mark the ever-accelerating, meter-by-meter retreat of the ice field within the past 50 to 100 years. The exhibits serve as graphic evidence of environmental change. Construction of an onsite interpretive center with state-of-the-art exhibits to coincide with snow coach tour operations provide in-depth multimedia information on global warming considerations to several hundred thousand visitors.



Part II: The Products

It is important to shape critical resource messages to reach specific audiences. This may require a variety of interpretive approaches. Traditional guided walks and talks serve certain local audiences and issues extremely well. Mass media presentations, on the other hand, may be most effective in reaching broad-scale audiences with broad-scale messages.

A multilayered approach often brings the best results in resolving critical resource issues. Individual interpreters at the local level can ensure one-to-one transfer of environmental messages with individual park visitors. Regional and central office personnel can establish contact with media corporations, environmental organizations, other government operations, and constituency groups and their representatives.

Mixing and matching of appropriate media with selected target audiences is essential. The following examples of interpretive techniques used to address critical natural resource issues were drawn from field surveys conducted in the United States and Canada between 1987 and 1993:

Traditional Personal Programs

Handouts and Brochures

Fact Sheets and Park Newspapers

Site Bulletins

Resource Message Panels

Resource Message Exhibits

Bulletin Boards, Calendars

Portable Exhibits, Interactive Video

Explorer Kits, Cassette Packages

Direct Mail, TV and other Home-based Contacts

Educational Group Programs and Support Materials

Teacher, Group Leader Workshops

Films, Video Presentations and Radio Technology

Partnerships and Volunteers

Press Releases and Feature Articles

Traditional Personal Programs

Special guided walks and talks will continue to play a significant role in interpreting critical natural resource issues. Guided walks may serve as a “controlled” form of access to fragile critical resource features. Likewise, talks, especially illustrated ones, can be effective alternatives to personal contact with sensitive natural resources.

Traditional walks and talks on general park themes include messages about specific and broad-based environmental concerns. The themes for such programs center on subjects such as *change* and *interaction* and their effects on natural landscapes and related qualities of human existence.

When walks and talks are designed to focus on a specific critical natural resource issue, they need an experienced interpreter and careful monitoring. Sometimes these programs are not the most appropriate method for addressing certain issues. For example, they may not reach the target audience needed to resolve the problem. Furthermore, they may become dull and unappealing if didactic, and at worst appear as propaganda statements by park management.

When used properly, however, walks and talks can generate overall understanding of resource issues, and are effective in fostering empathy and public support for resource conservation and management activities. Studies by the Canadian Parks Service/Parks Canada have shown that personal contact between visitors and park employees fostered enhanced comprehension of park subject matters, and that live programs, when done well, served as a sort of memory glue to understanding resource issues on a long-term basis. Thus, traditional programs will help to foster “appreciation...understanding...and protection.”

Canadian Parks Service/Parks Canada supervisors video taped live field resource conservation presentations, and thus were able to evaluate content and techniques of presentations. Questions asked of presenters in these reviews included: What is the environmental issue, and why is it an issue? How does it affect our environment? Are there illustrations of it in the park? How is the park remedying or studying the situation? What actions can individuals take?

Live interpretive presentations specifically oriented toward resolving resource issues may need to differ from park area to park area. For example, large, highly visited areas may need to have programs designed to reach significant numbers of once-in-a-lifetime visitors. Other areas may need to construct resource issue programs so that they are not repetitive or redundant to the frequently returning visitor.

Live presentations often benefit from a written outline that provides guidance and reminds the presenter to incorporate important messages and related considerations. They should cover a variety of factors including theme, goals, program objectives, audience composition, agency identification, presentation length, resource issue and message identification, method of delivery, and so on. Participation, involvement, fun, and interaction are also key considerations.

The initial planning for interpretive techniques and programs to address meadow damage matters in Yosemite Valley benefited from using an outline. (Other techniques, including developing resource message panels and establishing partnerships, are discussed later.)

Interpreting **Critical Resource Issues** in National Parks

Clearing the Air Series



Title: MEADOWS MATTER!

Theme: Intensive Care

Meadows are rich dynamic environments that require special protection to remain healthy.

Goal(s): To explain to park visitors meadow formation and dynamics, and to garner support for a successful meadow restoration program.

Program Objective(s): At the conclusion of the program, the viewer/participant should:

- be able to define a meadow;
- be able to describe one natural process that could result in the creation of a meadow;
- be able to give one reason why such a diversity of organisms occurs in meadows;
- be motivated to walk only on established trails through meadows, ride a bicycle only on paved surfaces, and avoid wet, fragile areas while walking in or near meadows.

Audience: Visitors to Yosemite National Park of all ages, with widely diverse interests and educational backgrounds. Keyed to walkers near meadows.

Technique: This 20-minute, preproduced slide program will be presented as part of a 1-hour ranger talk...

Program Description:

Problem/Issue: Meadows in Yosemite National Park have been subjected to a great deal of human manipulation and impact during the last 100 or more years. As a result, meadow size and species diversity have been reduced.

Solution/Message: Reduction and gradual elimination of future human impact and repair of previous damage will allow processes that created and sustained these meadows to prevail again.

Biological Diversity connection: Meadows provide the basis for many food chains (e.g., grasses-mice-owls; grasses-insects-shrews-coyotes). Meadows are to Yosemite as rain forests are to this planet (e.g., 36% of Yosemite's plant species occur on 3.5% of Yosemite's land).

Strategy: Most "volunteer" or unauthorized trails in Yosemite Valley meadows will be eliminated. Hikers will be channeled...

Handouts and Brochures

Handouts and brochures are an effective and relatively low-cost means of providing specific critical natural resource information to the public. They range from simple, single message tracts to full-color brochures devoted to major environmental concerns (such as air quality or biological diversity). Handouts and brochures can be designed to reach local and broad-scale audiences.

A key to the successful reception of the message is effective design. If the design is not enticing or inviting, it will be overlooked or disregarded. To encourage readability, handouts and brochures should emulate a provocative, concise, and yet interesting style, such as that used by many weekly news magazines.



The U.S. National Park Service has developed a series of brochures designed to address specific critical resource issues. These full-color brochures, given the heading "Resource Topics for Parklands" on their masthead, were modeled to complement existing U.S. National Park Service park area folders. The format of these brochures was arranged similar to current news magazines, with boxed text and captioned illustrations that can be read independently at the reader's discretion. A similar design was adopted for general overviews of additional resource topics.



The Canadian Parks Service/Parks Canada, and Canadian Department of Environment have produced a variety of brochures on significant resource issues, and have directed them toward specific audiences. Brochures on invasive nonnative plants and the natural role of fire are targeted to inform park visitors on management activities related to addressing these issues,

Brochures developed by Canada's Department of Environment on air quality issues have been targeted toward both national and international audiences (and are passed out at airports and other such international visitor hubs). Official Canadian Government printed materials are published in both French and English.

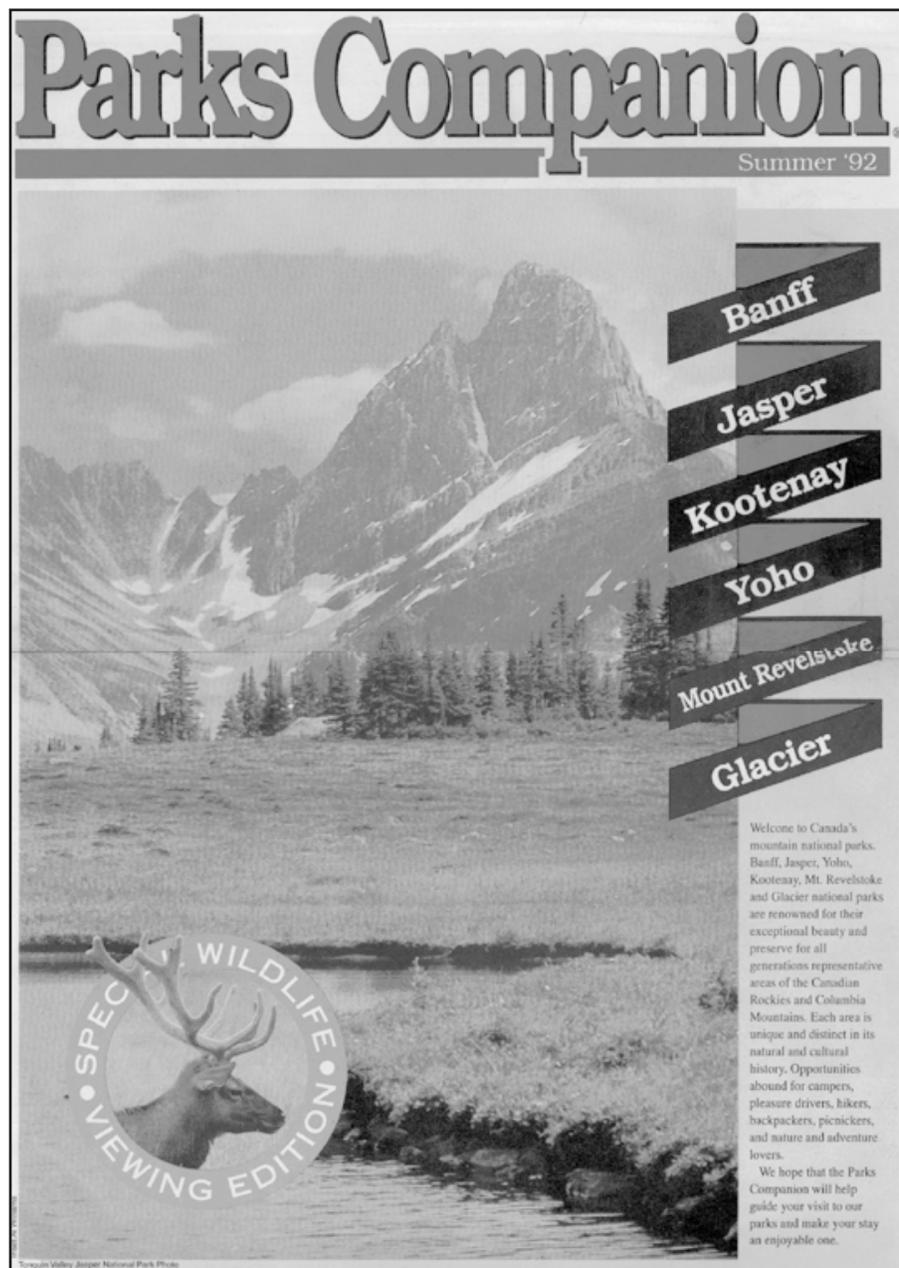
Fact Sheets and Park Newspapers

Fact sheets are an effective means of providing simple or condensed versions of critical natural resource information. They are generally only one or two pages in length, and contain detailed text printed on one or both sides of the sheet. Occasionally, they contain simple, but well-designed graphs, charts, diagrams, or appropriate illustrations.

Fact sheets can be typeset with a unique design or format and lightly illustrated to enhance their appearance. To facilitate local production, sometimes a specific "masthead" is pre-printed on blank paper stock. Then the appropriate information is composed on a blank sheet and multiple copies are run off on the preprinted stock.

Placing a date of issue somewhere on the fact sheets is advisable, so that revised versions can replace older ones as new information becomes available.

Locally produced, but professionally printed, park newspapers can be another means of providing pertinent resource issue information to visitors in a succinct manner. Park newspapers are popular and effective because they offer interesting bits of information, trip planning hints, timetables, etc. They often contain short feature articles. These articles can serve as interesting, concise summaries of critical resource issues, or as a means of disseminating information about management or public actions to achieve issue resolutions.



Environment Canada / Environnement Canada
Conservation and Protection / Conservation et Protection

4 Water

Fact Sheet
Water Works!

Water works for us in many ways, making our lives easier and more enjoyable. But we must take great care not to overuse and abuse this precious resource.



Water is a basic necessity but for every type of plant it accounts for about 65% of its weight. For animals, it accounts for about 12% of their weight.

Water is essential not only to life but also to the growth of plants. Since the dawn of time, humans have used water to improve the history of civilization. It is made water work for us in many ways. As early as 6000 B.C., our ancestors used water to irrigate their crops. Water powered the grist mills that ground grain into flour. Small and large rivers in the United States and Canada, making possible the development of the grain and lumber industries.

Water played a major role in the growth of our nation. Since the dawn of time, humans have used water to improve the history of civilization. It is made water work for us in many ways. As early as 6000 B.C., our ancestors used water to irrigate their crops. Water powered the grist mills that ground grain into flour. Small and large rivers in the United States and Canada, making possible the development of the grain and lumber industries.

Water transportation is still a major mode of transport. Water is also a raw material in the production of many goods. In the production of paper, for example, water is used to break down wood into pulp. In the production of steel, water is used to cool the metal. In the production of electricity, water is used to turn turbines. In the production of many other goods, water is used in various ways.

Many people think that water is an unlimited resource. In fact, water is a finite resource. We must take care to conserve water and use it wisely. We must also take care to protect our water resources from pollution and other threats.

Water is a precious resource. We must take care to conserve it and use it wisely. We must also take care to protect our water resources from pollution and other threats.

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Don't Be A Meadow Stomper!

Welcome to Mount Rainier National Park. We value the meadows of Paradise and Sunrise. The flower fields melt out in July and early August and beautiful displays of blossoms spring up as the snow disappears. These lush meadows are very fragile and need special care. Please walk only on the constructed pathways. Do not pick any flowers or trample any plants. Stay on pathways when taking photographs. Picnic only in designated areas - not on the meadows. We want the meadows to remain beautiful for all the world to see.

Bienvenido Al Mount Rainier
Las praderas de Paradise y Sunrise despiden un olor especial. Los campos de flores se deshacen en julio y comienzos de agosto y, a medida que desaparece la nieve, florecen los campos con un bello despliegue de colores. Estas frías praderas son muy frías y requieren de cuidados especiales. Por consiguiente, le rogamos caminar únicamente por los senderos especialmente construidos para tal fin, no tocar las flores ni pisotear las plantas. Permanezca en los senderos al tomar fotografías y haga sus meriendas campestres en las áreas designadas para ello - no en las praderas. Nuestra intención es preservar la belleza de estas praderas para que el mundo entero pueda disfrutar al admirarlas.

Bienvenue Au Mount Rainier
Les pâturages de Paradise et de Sunrise nous sont très précieux. La fonte des neiges, en juillet et début août, y cède la place à de superbes champs de fleurs. Ces riches prairies sont pourtant très fragiles et requièrent des soins particuliers. Veillez donc à ne marcher que sur les sentiers renforcés. Ne cueillez aucune fleur et n'en cueillez aucune. Restez bien sur les sentiers pour prendre vos photographies et ne mangez que dans les zones de pique-nique indiquées - pas sur l'herbe des prés. Nous voulons en effet préserver leur beauté pour que tout le monde entier puisse en profiter.

Willkommen Im Mount Rainier
Die Bergwiesen von Paradise und Sunrise liegen uns sehr am Herzen. Die Blumendörfer blühen im Juli ab, und im frühen August, wenn der Schnee verschwindet, erscheint eine wunderbare Blütenpracht. Diese üppigen Bergwiesen sind sehr empfindlich und bedürfen besonderer Pflege. Bitte gehen Sie nur auf den gebauenen Wegen und pflücken Sie keine Blumen, und treten Sie bitte nicht auf Pflanzen. Wenn Sie fotografieren, bleiben Sie bitte auf den Wegen. Picknicks können nur in dem bezeichneten Bereich abgehalten werden - nicht auf den Bergwiesen. Wir wollen die Schönheit der Bergwiesen für alle erhalten.

歡迎光臨 Mount Rainier (維尼亞山國家公園)
Paradise (天堂)及Sunrise(日出)的草原對我們非常寶貴。七月至八月間，在場開始融雪，冰雪一消失，美麗的花朵便有盛開。這些翠綠的草原非常嬌貴，需要特殊的照顧。請只在建築好的小徑上行走，切勿攀摘花朵或踐踏任何植物。拍照請留在小徑上。野餐要於指定地方——不可在草地上。我們希望這些草原能保持美麗，好讓全世界觀賞。

Mount Rainier (마운트 레이어이 국립공원)에 오신 것을 환영합니다.
Paradise 와 Sunrise (산라이즈)의 목초지는 우리에게 매우 귀중합니다. 칠월과 팔월 초에 이 꽃들만 녹아서 눈이 없어짐에 따라 아름다운 꽃들이 피어 납니다. 이 무성한 목초지는 손상되기가 매우 쉬우므로 특별한 주의가 필요합니다. 반드시 축조된 동로로만 다니십시오. 정대로 꽃을 꺾거나 식물을 밟지 마십시오. 사진용 촬영할 때는 동로로만 하십시오. 소풍은 - 목초지로 나가지 마시고 - 지정된 장소에서 하십시오. 우리는 이 목초지가 아름답게 남아서 모든 세계가 볼 있도록 하고 싶습니다.

Many people think that water is an unlimited resource. In fact, water is a finite resource. We must take care to conserve water and use it wisely. We must also take care to protect our water resources from pollution and other threats.

Canada



Please walk only on snow or flagged trails.

Western Canadian mountain parks have taken advantage of combining resources, and by using carefully selected advertisers produce a colorful high-quality free seasonal newspaper. Park personnel design layout and text to include articles on various critical resource issues in each edition.

Fact sheets for many U.S. and Canadian national park areas on resource issues, such as fire or migratory birds, have been designed for handouts at visitor centers and other fixed locations, as well as in the field.

The Wolf:

A Howling in America's National Parks



The silence engulfs you as you move through the timber. Suddenly, the quiet is broken by a faraway call. Your pulse quickens and you wonder if your ears are playing tricks on you. It sounded like...couldn't be...no, another... and another.

Goose bumps form as you recognize the unmistakable howls of a wolfpack. You catch yourself looking back across your shoulder.

Your eyes strain for a fleeting glimpse of one of nature's most misunderstood creatures.

What is this animal that fires our imagination so, at once repelling and attracting us? Can we distinguish between the reality of the wolf and the legends we have created? Can we accept this fabled predator as a part of our lives, occupying its well-earned niche in the scheme of things? If so, where will it live? Can we allow it to hunt again in remote areas where it has been eliminated? Can we enjoy its howl again in some of our national parks where it once roamed free?

Should Wolves Be Restored to The National Parks?

Wolves were a natural part of the western national parks. Restoration of wolves into those parks will help regain the wildness that was lost with their destruction.

Outside organizations, such as the National Park Foundation, the National Parks and Conservation Association, and other friends groups, occasionally produce high-quality compatible resource issue materials. Often these materials are well suited for reaching large, general audiences with specific resource messages.

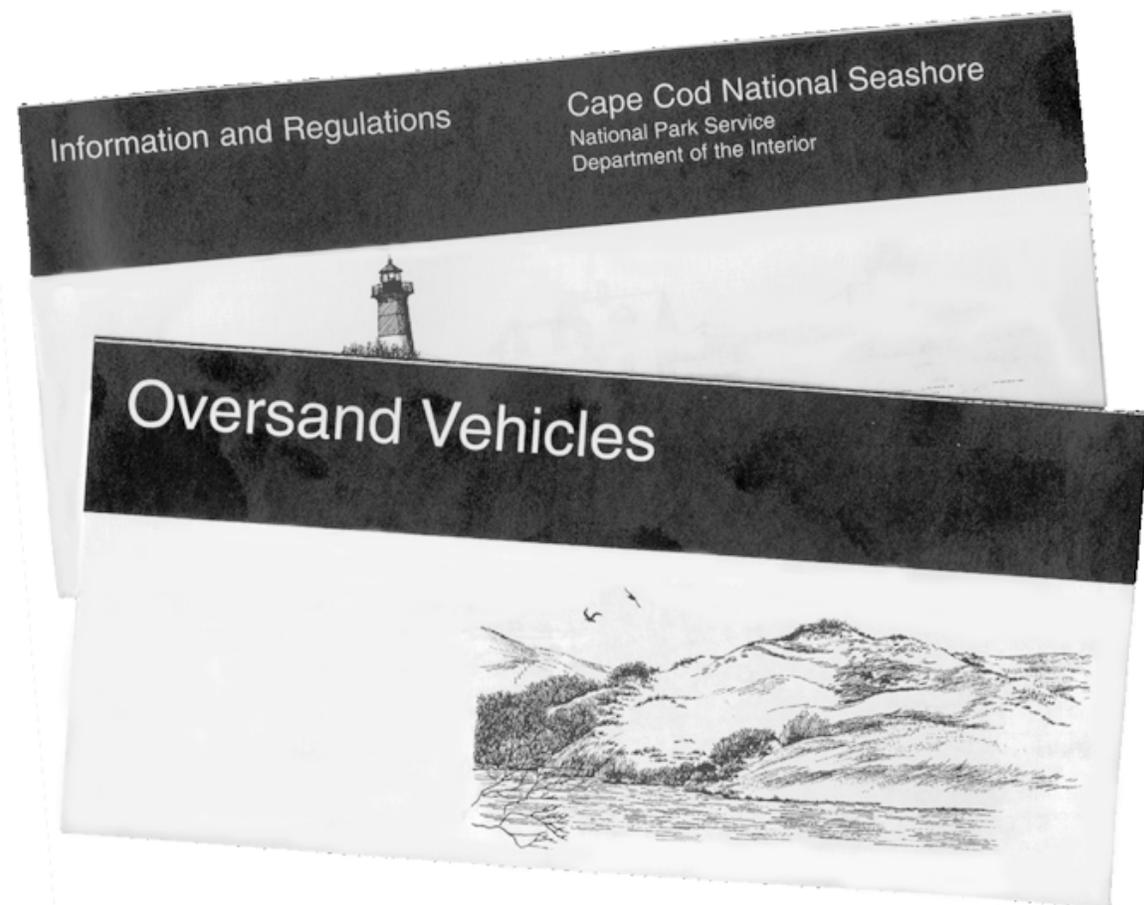
Site Bulletins

The site bulletin format, designed by the U.S. National Park Service Interpretive Design Center in Harpers Ferry, West Virginia, has proven to be a useful means of disseminating information to visitors at the local level in a simple and cost-effective manner.

The bold, yet uniform style of the layout gives it a professional appearance and recognizable identity. Site bulletins can serve independently or with other interpretive devices or materials. They can provide up-to-date information that cannot be presented in more permanent exhibits or displays, and can be used as written supplements to live or automated audiovisual presentations. Likewise, site bulletins can be mailed as a follow-up to public inquiries about critical natural resource issues or related subjects.

Site bulletins can be geared to reach various audiences. And because they are simple in form and design (one color ink on one color paper with universal masthead design), they can be rearranged to meet different needs. For example, site bulletins can be written in several languages, or for different levels of comprehension (e.g., child vs. adult level).





Site bulletins addressing resource issues have been a popular means of quickly and inexpensively distributing information to various target audiences in a number of U.S. National Park Service areas. Site bulletins offer a more enhanced design than fact sheets. Their ability to be folded make them suited for inserting into envelopes for mailing of folder boxes for distribution at fixed locations, such as visitor centers or park administrative offices.

Resource Message Panels

A relatively new device on the market is the resource message panel, recently developed by the Harpers Ferry Interpretive Design Center of the U.S. National Park Service. These panels are designed to address both resource management and safety concerns. They serve as a means for communicating important precautionary or regulatory messages directly on site, in a manner that provides preliminary background on the issue as well.

These screen-printed fiberglass panels, placed at strategic places such as walkways along ponds or streams, or beach access points, carry a bold red band and catchphrase at the top, with grey and white graphics and pictographs to convey their message along with a brief text. They are much simpler than normal wayside exhibits, and as a result, are much more versatile and less expensive to produce and install (as little as \$20 per panel).

Resource message panels can be an effective alternative to traditional regulatory signs that tell people what not to do, but not the reasons why.

Pond Damage

Kettle ponds are deep glacial basins. Their clear fresh water is a naturally acidic habitat for distinct groups of plants and animals on the Cape.

The pools have no outlet to "flush" them. Human and animal wastes, soap, trash, salt from ocean swimmers, even plain dirt -- all of these turn a clear pond muddy by altering its normal chemistry.

Help the kettle ponds stay clean, clear, unique. Please:

- Use Restrooms, not the pond.
- Don't bring dogs or horses here.
- Don't use soaps and cleaners.
- Put trash in receptacles.
- Shower off before you swim, especially if you've been in the ocean.
- Don't trample! Stay on the swimming beaches and the trails.



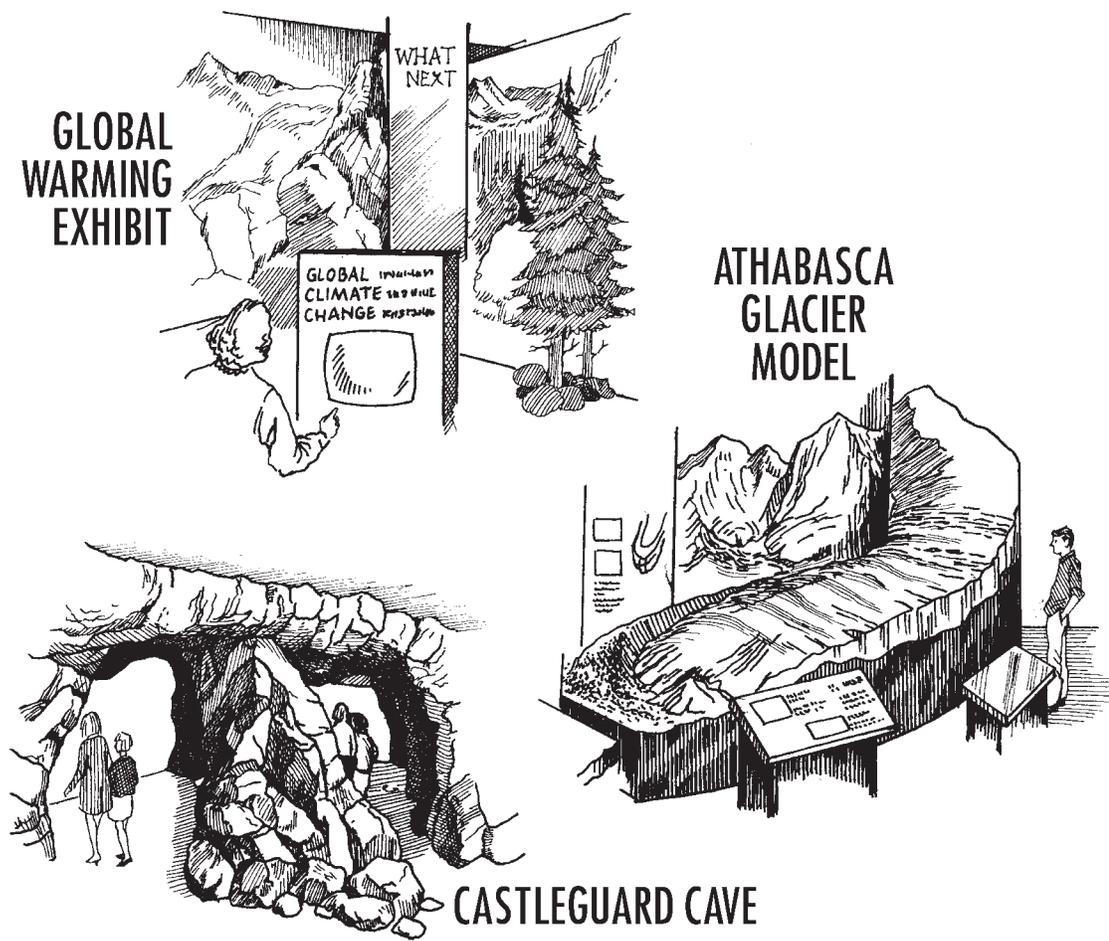


Resource message panels in Yosemite National Park are strategically placed along walkways bordering meadows. Resource message panels at Cape Cod National Seashore are situated at public entrances to freshwater ponds. Target audiences are reached directly at the site of the resource in both of these examples, where appropriate behavior and understanding of issues is most critical.

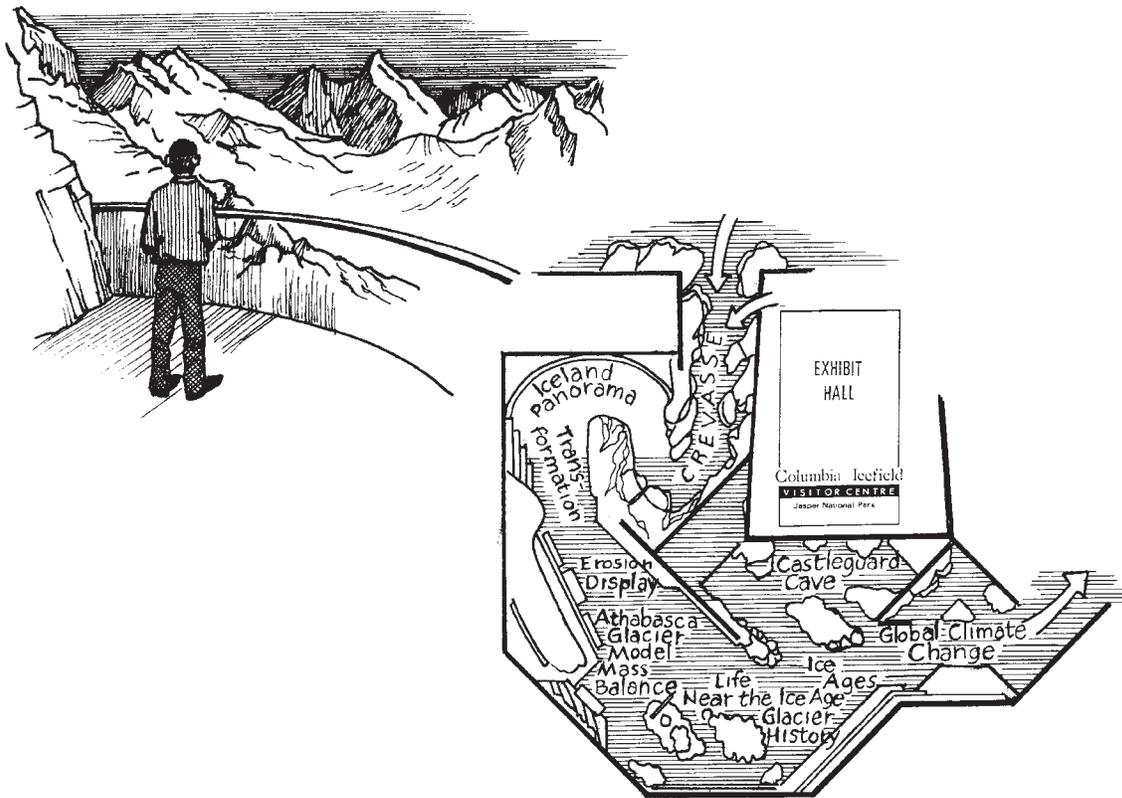
Resource Message Exhibits

At times, a specific park resource can also serve as an exemplary feature or model for showing or explaining critical issues or broad-scale environmental concerns. In such cases, exhibits about these features can incorporate messages about major environmental concerns in conjunction with traditional interpretative information. The impact of reaching selected audiences can be quite significant.

A good example is the incorporation of global warming messages into onsite exhibits at the Columbia Icefields in Jasper National Park. Global warming is a widespread concern that needs to be brought to the attention of a broad audience. Traditional programs such as campfire lectures and handouts may have only limited appeal to many park visitors who find this subject abstract or vague. On-site exhibits at the icefields, however, show visitors measurable changes in the immediate setting due to the effect of global warming, both through onsite markers on the ground showing where the glacier's edge was a few dozen years back, and by photographs of the area showing different alignments of the glacier at the turn of the century. The exhibits at this location convey the message to thousands of visitors annually.



Custom designed exhibits located at the Columbia Icefield are designed to reach the high volume of individuals needed to help resolve atmospheric change concerns. Simple on-the-ground markers designating the point of the ice front over the past several dozen years are a graphic display of the rapid retreat of the icefield in recent times. Snowcoach tours offer partnership opportunities to disseminate this story even further to large audiences.



Bulletin Boards and Environmental Communications Calendars

Bulletin boards can provide visitors with information on critical resource issues, especially those related to seasonal occurrences. They have the advantage of being able to work independently in a broad range of settings—from exceptionally busy visitor areas to extremely isolated ones. People are naturally attracted to bulletin boards because they want to obtain current safety, regulatory, or weather information.

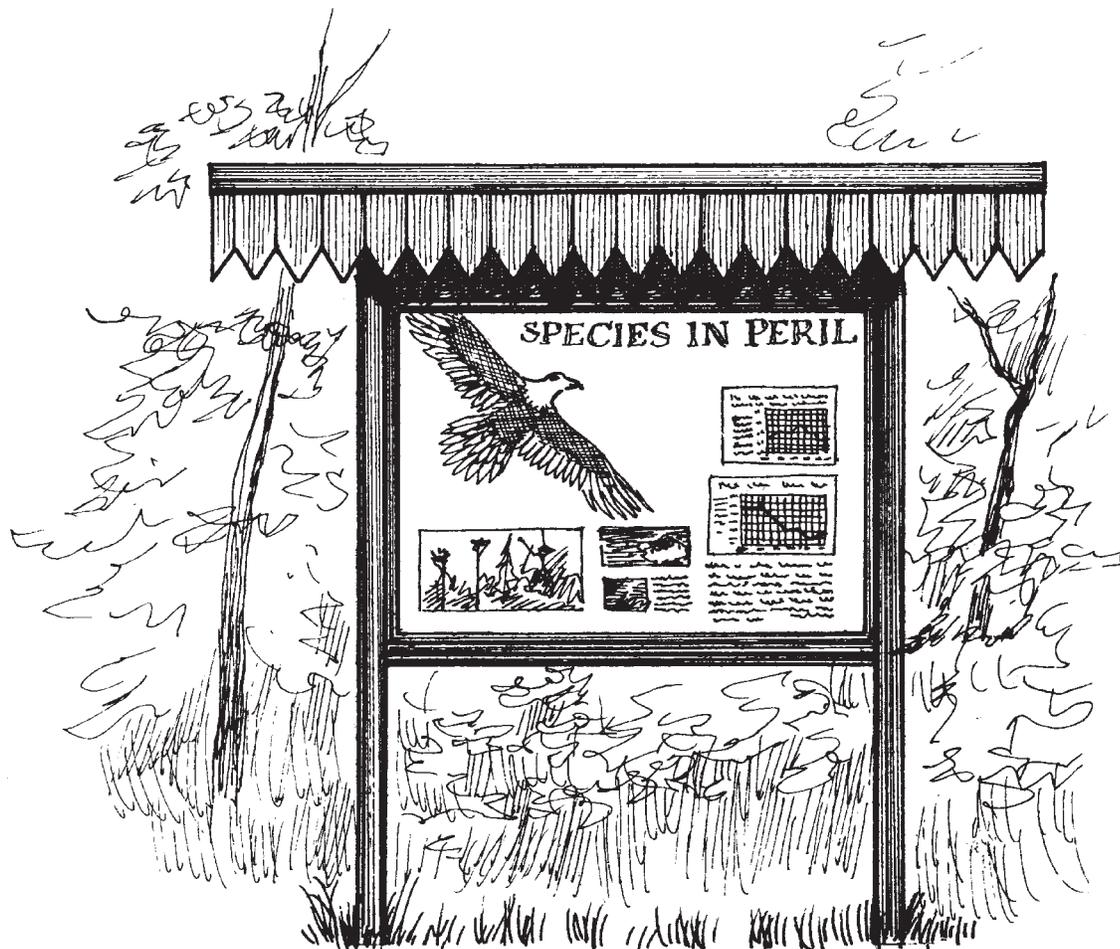
For this reason, bulletin boards can provide a “personal” touch. If properly maintained, they convey a feeling that someone in charge has recently left behind an important message, but could not be there to give it in person. Bulletin boards are useful for explaining local resource management concerns or activities, such as why some lightning-caused fires may be allowed to burn (Do you see smoke today? Don’t worry!), or why specific nonnative plants are actively being removed from the area.

Although bulletin board information must be contained within a relatively limited form, it can still be effective. By using a modified site bulletin format, or some other appropriate design arrangement, bulletin board information can be presented in an attractive and forthright manner. Unfortunately, bulletin boards have the disadvantage of being easy targets for vandalism. Likewise, when left unattended, information or facts can become dated.

Environmental communications calendars are another means of posting important resource issue related information. Large format calendars can be posted at prominent locations and may include information such as community environmental service project dates, hazardous materials pickup dates, rutting season warnings, special event and environmental program dates, etc. Calendars can also be printed in a smaller format and distributed on an individual basis where appropriate.

TERRA NOVA NATIONAL PARK ACTIVITY SCHEDULE – JULY '92

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
SPECIAL EVENTS – See bulletin board for details July 1 – Canada Day July 18 – Parks Day July 12 & August 2 – Aquarium Days Saturday – fire safety, and Sunday – Coast Guard Day	August 1 – Kids' Day August 14 & 15 – Folk Festival August 28 & 29 – Starwatch with the Royal Astronomical Society August 7 & 8 – Historic Night Walk and Drama Night September 2 – Coast Guard Demonstrations		1 11am Puppets - Shiny Stone 	2 7am Bird Walk PA 2pm Puppets - Big Move SP 9:30pm Warden Talk NS	3 11am Puppets - Mysterious Hole AC 8:30pm Sunset Walk LH 8:30pm Be Green NS	4 7am Bird Walk SP 11am Edible Walk HQ 2-4pm Activity Centre 7:30pm Campfire
5 10am Forest Walk HQ 2pm Sand Sculpt. SP 3pm Church Service NS 8pm Mammals NS	6 7am Bird Walk SW 7pm Beavers CB 9:30pm Ocean NS	7 9:30am Seaside Walk SL 9:30pm Forest NS	8 11am Puppets - Shiny Stone AC 9:30pm Birds NS	9 7am Bird Walk PA 2pm Puppets - Big Move SP 9:30pm Film Night NS	10 11am Puppets - Mysterious Hole AC 8:30pm Sunset Walk LH 8:30pm Be Green NS	11 7am Bird Walk SP 11am Edible Walk HQ 2-4pm Activity Centre 7:30pm Campfire CA
12 AQUARIUM DAY 10am Forest Walk HQ 2pm Aquariums HQ 8pm Mammals NS	13 7am Bird Walk SW 7pm Beavers CB 9:30pm Ocean NS	14 2 p.m. Seaside Walk SL  9:30pm Forest NS	15 11am Puppets - Shiny Stone AC 9:30pm Birds NS	16 7am Bird Walk PA 2pm Puppets - Big Move SP 9:30pm Film Night NS	17 11am Puppets - Mysterious Hole AC 8:30pm Sunset Walk LH 8:30pm Be Green NS	18 PARKS DAY 7am Bird Watch SP 2-4pm Kids' Activities AC 7:30pm Fisheries Campfire PA* 9:30pm National Park Film NS
19 10am Forest Walk HQ 2pm Sand Sculpt. SP 3pm Church Services NS 8pm Mammals NS	20  7pm Beavers CB 9:30pm Oceans NS	21 4pm Seaside Walk SL 9:30pm Forest NS	22 11am Puppets - Shiny Stone AC 9:30pm Bird Talk NS	23 7am Bird Walk PA 2pm Puppets - Big Move SP 9:30pm Film Night NS	24 11am Puppets - Mysterious Hole AC 8:30pm Be Green NS	25 10am Bicycle Safety AC 2pm Fire Safety Displays Gander's Fire House Open House 8:30pm Campfire CA
26 10am Puppets - Shiny Stone AC 2:30pm Coast Guard Display HQ 2-5pm Coastguard Open House HQ* 9:30pm Films NS*	27 7am Bird Walk SW 7pm Beavers CB 9:00pm Ocean NS	28 2:30pm Seaside Walk SL 9pm Forest	29 11am Puppets - Shiny Stone AC 9:00pm Bird Talk NS	30 7am Bird Walk PA 2pm Puppets - Big Move SP 9pm Warden Talk NS	31 11am Puppets - Mysterious Hole AC  8:30pm Be Green NS	AUGUST 1 KIDS' DAY! Special Kids Campfire!



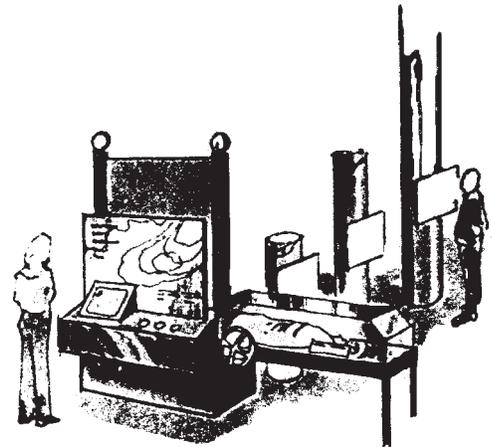
Bulletin boards strategically placed at visitor concentration points can be used to inform visitors about resource conservation issues, as well as to provide general information. Bulletin boards in remote settings need regular upkeep, but when properly maintained can provide a personal touch in such settings. Calendars in large format, and as handouts, can accompany bulletin boards.

Portable Exhibits and Interactive Video

Portable exhibits come in a wide range of sizes and shapes. Many exhibits on the open market already present information on broad-scale environmental issues. The Smithsonian Institution has developed an excellent and relatively inexpensive poster and panel exhibit on biological diversity. It is backed up by a short optional video program that can be shown in association with the exhibit.

Portable exhibits on critical resource issues can be used either within or outside the park. After the Yellowstone fires in 1988, portable exhibits on the natural role of fire in the environment explained to the visiting public the park's position on letting some natural fires burn, the problems with excessive suppression activities in the past, and the difficulty in dealing with truly catastrophic fire occurrences. The temporary portable exhibits were so successful that the park knew that it could use the theme of fire in preparing a major permanent exhibit on "The Role of Fire at Yellowstone" at one of the park's main visitor centers.

Elk Island National Park, on the other hand, is located only one-half hour away from Edmonton, Alberta. The park is popular with urban residents, especially during the warmer months. Elk Island is also an extremely important wildlife reserve, providing essential habitat for bison, elk, moose, and important species of migratory birds. Public awareness of the need for the park to focus more on habitat management than on visitor-service facility development, is important. Since the city of Edmonton is famous for its shopping malls (some even have full amusement parks and hotels within their confines), the park staff hit upon the idea of setting up portable exhibits on park resource subjects and themes at these malls. When possible, the exhibits are staffed by a Canadian Parks Service/Parks Canada employee. These exhibits have been extremely successful, and have been a means of reaching thousands of individuals who might not otherwise learn of park issues.



ARCADE DISPLAY

Portable exhibits on resource issues at Elk Island National Park are an effective means for reaching urban audiences who frequent the West Edmonton Mall in Edmonton, Alberta. The mall offers a variety of attractions year-round to local residents who live within only a half-hour's drive of the park, as well as regional, national and international visitors.

Interactive video is another means of reaching park users in settings which may or may not offer personal contact. Touch screen systems can be set up at park information locations, hotels, tourist centers, shopping malls, and the like. Interactive programs that are user friendly are extremely popular, and can be of service to literally thousands of users a week. Some programs offer printouts of pertinent information on command. An award winning interactive video system was developed at Kootenay National Park, British Columbia, with the support of high school students who helped to develop the software for the program.

Monday, April 9, 1990

KOOTENAY ADVERTISER

columbia valley

this week

Infinite field trip starts this summer

Advertiser staff

Tourists visiting Kootenay National Park this summer will have the opportunity to use the first Infinite Field Trip Computer Program.

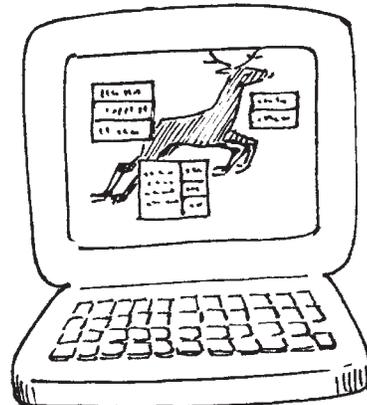
The Infinite Field Trip is an interactive video which can be used by visitors to retrieve information on recreational activities in the area. The project is a joint venture between Kootenay National Park and the Lake Windermere School District.

The terminal will be housed in the Aquacourt at Radium Hot Springs pool. Larry Halverson, a park naturalist, says the site was chosen because it's open 365 days a year and 350,000 people visit the site annually.

Halverson, who developed the

software for the program along with students from David Thompson Secondary School, says the program includes 6,000 slides of Kootenay National Park and the surrounding area. He adds that it also includes 27 minutes of moving footage, including cross country ski scenes, avalanches, back country etiquette, golf courses and fishing.

Halverson says the project also has great potential for extension in the school system.

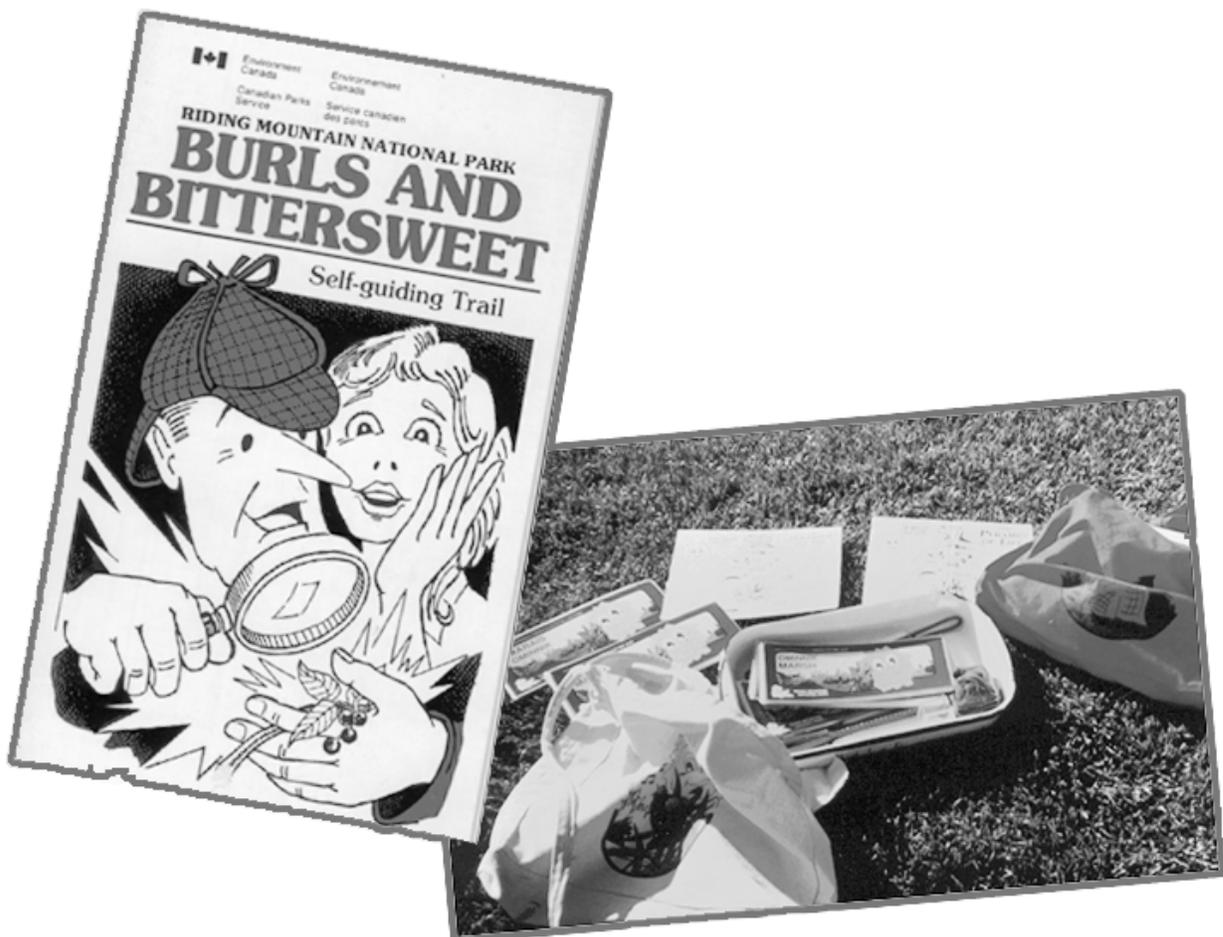


Explorer Kits

Finding ways to get individuals directly involved in learning about the environment and related concerns is always a challenge. Explorer kits are one means of helping individuals and families find out about their surroundings in an interesting way. The staff at Riding Mountain National Park, Manitoba, has designed an exciting and colorful canvas pouch that contains a “mystery-solving” booklet, dip nets, pans, and other literature and materials that individuals and small groups can use in the park. The kits are free, and are loaned out at the park visitor center.

A variation on encouraging involvement is to capitalize on popular use of personal video cameras. Some parks in Canada have been offering individuals free shooting scripts for use while touring through the park. The scripts give interesting tidbits of information, optimal vista locations and commentary the user can read out loud (or dub in later) about park resource issues.

The U.S. National Park Service is developing a national Junior Ranger Program, featuring an activity book which participants must complete in order to obtain recognition and additional materials. Parks featured in the activity book will frequently use critical natural and cultural resource issues for their junior ranger exercises.

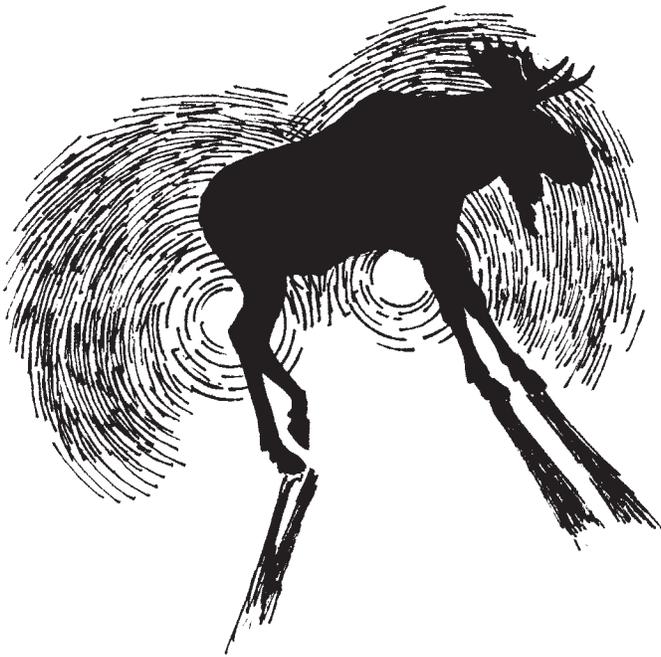


Audio Cassette Packages

A specially produced audiotape cassette may be just what is needed to reach a specific target audience. Road kills of large mammals are a significant problem in many parks, especially in parks in the Canadian Rockies. Kootenay National Park is located amid a heavily used trucking corridor. In order to form a partnership with truck drivers, the park staff proposed a plan of recording cassette tapes with a combination of country and western music and simple but straightforward messages about road kill problems and methods for improving the situation. The tapes can be handed out free to all passing truck drivers.

Tapes can be combined with signs, handouts, and other interpretive communication devices to develop a program that encourages drivers to participate in getting other drivers to be more careful in the park. As a result of recent communication efforts, truck drivers are currently signalling other drivers coming in the opposite direction of oncoming wildlife by turning on their emergency blinker lights and by talking on their CB radios.

Prerecorded audiotape tours are another means of providing visitors with a means of exploring and learning about park resources while traveling over park roadways. Resource management messages can be easily incorporated into these programs. Some areas have also experimented with this approach for individual nature trails or other park features, sometimes providing tape recorders as well as the tapes for rent or loan.



Direct Mail, Community TV Access, and Home-based Contacts

Direct mail can be used to send out resource messages to specific audiences, especially those who have actual or potential contact with critical resource features. This approach reaches these individuals with pertinent information, so that they will be more supportive of management policies and more aware of the need for changes in behavior.

Direct mail materials can be sent to preselected postal zones, and can be a relatively inexpensive yet effective means of contact by using bulk-rate postage procedures. Although such materials should be attractive and informational, great care must be taken to ensure that messages sent out in this form are factual, nonaccusatory, and readily understandable. Direct mail programs at Cape Hatteras and Fire Island National Seashores have proven to be advantageous in reaching select audiences with critical resource issue information. These direct mail initiatives may sometimes be enhanced through partnership arrangements. Several Canadian park areas have found auto insurance companies willing to incorporate large game road kill (collision hazard) information to clients in flyers sent out with monthly billing statements.

Community access through cable television is another means of reaching large numbers of the public on their home turf. Cable television stations are often required to provide public service time, and programming on park resources and issues may be of interest to them. Some park areas are currently using dedicated cable channels to provide 24-hour menu-board information to select within park cable users (e.g., through televisions provided in hotel rooms located within national parks such as Banff and Yosemite). This option could be expanded on a broader level, both county-wide (adjacent to individual parks) and to select cities or urban areas. For example, a dedicated parks information channel is being designed for the city of Calgary, featuring both menu-board information and select video presentations. A channel of this sort can feature information on Banff National Park and other Canadian national park areas in the Rocky Mountains.

Banff National Park is also planning new methods for reaching large numbers of Asian visitors before they arrive at the park. One means is by getting airlines to present park resource-related video programs to passengers during their lengthy flight. One of the most important messages is keeping a proper distance from wildlife (especially elk). On occasion, several visitors who have gotten too close while attempting to take pictures have been killed.

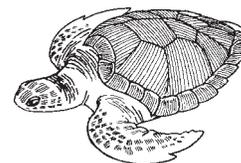
You Can Help...

On a summer night, a 300-pound loggerhead sea turtle hauls herself onto the beach to nest as her ancestors have done for millions of years. Any interference can cause this threatened animal to return to the water without laying her eggs. Her young hatchlings are needed to rebuild the greatly depleted population. *If you observe a sea turtle at night crawling from the surf:*

Do not approach her. Keep voices down and lights out. Leave her undisturbed. Report sighting to a park ranger.

Bulk rate
US Postage
Paid

CARRIER ROUTE PRESORT



Educational Group Programs and Resource Materials

Environmental education group programs encourage personal understanding of the environment and environmental issues. Lesson plans and other supporting curriculum materials help group leaders to develop appropriate environmental education activities that can be used in or outside the park. A number of parks have prepared local environmental education materials which are directly related to specific critical natural resource issues or features. Support materials can be designed for onsite activities (such as for groups participating in Yellowstone National Park's *Expedition Yellowstone*) or for offsite classroom studies of park resources and issues in remote settings.

Teachers have indicated that they appreciate user-friendly materials that are flexible and do not take large amounts of set up time. Teacher materials designed at Cape Cod National Seashore are produced in a multifaceted format—brief but comprehensive lesson plans on critical resource issues are accompanied by short videotapes, student reader sheets (written in a format similar to articles produced for National Geographic World and Ranger Rick magazines), attractively designed but concise fact sheets, and activity plans (for games and other appropriate group activities).

Cape Cod National Seashore
Lesson Plan



Lesson: Biological Diversity . . . A Value Worth Saving

Objectives: Students will be able to:

- describe medical, industrial and food values of plants and animals.
- describe what loss of habitat does to species.
- discuss previous misconceptions about unlimited abundance.
- discuss the value of National Parks and related areas in preserving Biodiversity.

Materials:

- Student Reader Sheet (first 2 pages are general & can be issued separately)
- Fact Sheets on Biological Diversity
- Videos on Biological Diversity

Age Level: Adaptable to 5th grade and above.



Critical resource issue lesson plans at Cape Cod National Seashore have a three-tiered format. Short videotapes on resource topics, student reader sheets, and hands-on, action-based field activities give students personal knowledge of and experience in resource issues.

Environmental Education Group Leader Support

Environmental education program materials can be designed to be used independently by groups, eliminating the problem of inadequate staffing. However, when staff time can be devoted to presenting periodic group leader workshops, the results can be extremely beneficial. If properly motivated and adequately prepared through such workshops, group leaders can reach additional audiences that park staffs might otherwise overlook. Teacher workshops at Cabrillo National Monument off the coast of San Diego, California, have provided teachers with hands-on exposure to marine life-forms and an awareness of environmental concerns related to their survival. Individual leader support can be fostered off-site via mail, teleconferencing, or computer internet programs.

The National Park Foundation has promoted a campaign entitled, Parks as Classrooms. This campaign is designed to encourage schools and parks to connect with each other. Parks are encouraged to develop additional materials for use by teachers, or to revise existing materials. A special logo has been designed by the National Park Foundation to help promote this initiative.

NATURAL RESOURCES CAMP
for Sixth Grade students
Operated by Acadia National Park and the Appalachian Mountain Club

SCHOLASTIC NEWS
AMERICA'S CLASSROOM NEWSPAPER Vol. 51 No. 26 • May 19, 1989 • USPS 756130 EXPLORER EDITION 4

ARE NATIONAL PARKS TOO POPULAR?

By Tamara Hanneman

Ocean waves crash on the craggy granite bluffs along Maine's coast. Hawaiian volcanoes spew bright red lava, rocks, and ash. Alligators slide through the Everglades in Florida. Glaciers creep through Alaska's arctic mountains.

The U.S. National Park system preserves these natural wonders for all to enjoy. About 300 million people will visit our 80 million acres of parkland this year. That's double the number of people who visited the parks 20 years ago. It may be more than our parks can handle, wilderness supporters say.

Tourist Overload

This summer, people will probably have to wait four hours or more to see popular sights such as the Old Faithful geyser in Yellowstone National Park.

(Continued on p. 2)

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PARKS AS CLASSROOMS

Made possible by grant funding from the National Park Foundation

Courtesy of Scholastic News

Films, Video Presentations, Radio Technology

Documentary films and video programs on critical resource issues are an excellent means of getting the message out to large or diversified audiences. Short, professionally produced video tape programs can be produced and used at the local level quite effectively.

At Cape Cod National Seashore, a discovery of archeological features dating back 8,000 years caused much local and regional interest. Visitor impact, from trying to see excavation activities close-up, forced roping off the area. A high quality 15-minute video presentation explaining the process and significance of the project was then shown hourly in the main park visitor center. The results were extremely favorable. Visitor interest led directly to visitor support and on-site impact was greatly reduced.

Similarly, Channel Islands National Park has used a special video system to let visitors “experience” sensitive resources, which for several reasons they cannot see firsthand. First, these resources are underwater. Second, they are in restricted areas. The park set up a two-way video camera/intercom system by which the public can actually talk with U.S. National Park Service divers while they inventory and monitor sensitive underwater resources.

Feature length films are expensive, but are occasionally within the realm of consideration when produced by appropriate affiliates, such as the National Geographic Society, the Public Broadcasting System (PBS), the National Film Board of Canada, etc. Quality feature productions can be aired to national audiences. Good presentations on grizzly bears, the Yellowstone fires, and other critical resource issues are already in circulation. Quality feature length films are often reproduced and made available as video cassettes, further enhancing distribution possibilities. Films and videos also serve members of the public who are unable to visit parks in person. This is an effective alternate means of understanding and appreciating them. Feature length professional programs and short well-produced, locally-made programs on resource issues can also be made available for sale through park bookstores, or where appropriate, for loan. As an extension on this idea, the Lake Louise Visitor Centre in Banff National Park offers individuals and groups the opportunity to select a video program freely off a shelf, and watch it on their own in an alcove of the building set aside for this purpose. Topics include bear, elk, fire, etc. Videos can also be captioned.

Radio technology has also been used to provide park visitors with 24-hour short, repeating radio messages in several park areas. New technology may make modification of messages easier and allow for instantaneous updating of information. Weather information, fire hazards, wildlife problems, road conditions and the like make these presentations of extreme interest to park users. Most existing systems are short-range. There is potential, however, for expanding radio broadcasting possibilities (e.g., via linking with cellular phone systems) to cover large-scale areas, enabling visitors to obtain park information in remote settings. Another use of radio is to tie in with public and commercial radio stations to provide periodic park information segments. The Canadian Broadcasting Corporation initiated a program of interviewing “park people” located in Alberta, and then airing short topical pieces. It seems that the public is interested in hearing “what the air smells like and what the sky looks like” in their parks, as well as what is needed to take care of them.

Partnership Opportunities, Volunteer Activities

Creating partnerships for promoting enhanced delivery of resource conservation issue messages can result in significant benefits. Park concession employees, local tour bus operators and even local hotel and restaurant workers are often perceived by the visiting public as park representatives. Friends groups and cooperating associations can also play a major role in promoting and disseminating environmental messages. It is important to build bridges with such groups whenever possible.

Banff National Park, Alberta, is using a novel program to recognize members of the tourist industry by offering periodic awards to outstanding nonpark employees in recognition of their superior delivery of key environmental messages to the public. Such awards can consist of a plaque or cash when appropriate. In an attempt to build bridges with the tourist industry, Jasper National Park in Alberta and Cape Cod National Seashore in Massachusetts have each developed a means of providing local tour operators a free, comprehensive "Guide's Guide" notebook. These notebooks contain sequential location-by-location information on park resources, interesting facts, figures, stories, and other tour tips. Resource conservation messages are an important part of these packages.

Partnership arrangements with nonprofit organizations can help meet needs where government funds or resources are not readily available. For example, partnership programs with the National Park Foundation in the United States have enabled parks to develop and disseminate various environmental education programs and materials, including public distribution of high quality fact sheets and handouts on topics such as wolf reintroduction considerations.

Nonprofit bookstores operated by friends groups or cooperating associations often serve as a means of generating funds for interpretive programs and activities at parks. Revenues from such sources can be used to fund nonpark employee environmental awards, as well as for designing and producing interpretive materials (e.g., pamphlets, booklets, and video presentations) on critical resource issues. Bookstore operations can help promote environmental messages on the front line as well, by promoting environmentally friendly packaging of products sold, and through encouraging recycling activities. The bookstore operation at Jasper National Park expanded the partnership option an additional step by getting the Kodak corporation to underwrite printing simple environmental messages on bookstore bags.

Developing partnerships and cooperative activities with concessionaires and other related entities is essential when it comes to ensuring accurate dissemination of environmental messages. Concessioners often are anxious to play a positive role in distributing information about critical resource issues. The Yosemite Concession Services Corporation, for example, provides a free color magazine to concession patrons. Resource issues and public actions that can help in their resolution are major features of this publication. Without some form of checks and balances, however, nongovernment employees may otherwise be at free will to tell things as they independently perceive them. Field observations have shown that situations like this can lead to the public receiving contradictory resource issue information. This is especially significant in the case of tour bus drivers, tram operators, concession guides and the like, serving as key frontline contacts with the public. The individuals serving in these roles need to be considered a target audience on their own, deserving special attention regarding understanding current agency positions on various critical resource issues. Volunteers in parks are another important component of the partnership package. With proper training they can provide live contact with visitors, and can assist behind the scenes in a variety of ways.

Building opportunities to involve volunteers in resource conservation activities can be yet another way of establishing partnerships at the personal level. Several Canadian Parks Service/Parks Canada areas have established simple one day or one hour projects for interested visitors. Junior Ranger programs in some U.S. parks also require a helping activity. Such activities include simply carrying field guides or other materials for the ranger or guide, helping with cleanup activities or habitat restoration, and designing and producing a pamphlet or video on a park resource issue.

Other programs encourage the use of vacation time. Programs at Cape Cod National Seashore involve both regional and international volunteers, who use vacation time for several weeks to assist the park in various resource conservation projects. Participants in such programs have replanted beach grass on sensitive barrier beach areas, and have constructed wheelchair accessible boardwalks through fragile freshwater wetlands.

INTERNATIONAL HARVESTERS



Staff Photo by **STEVE HEASLIP**

■ Ian Nesbitt, left, of Britain and Veronica Ghelardi of Washington, D.C., pull weeds from an abandoned bog in Truro.

Britons aid Cape conservation

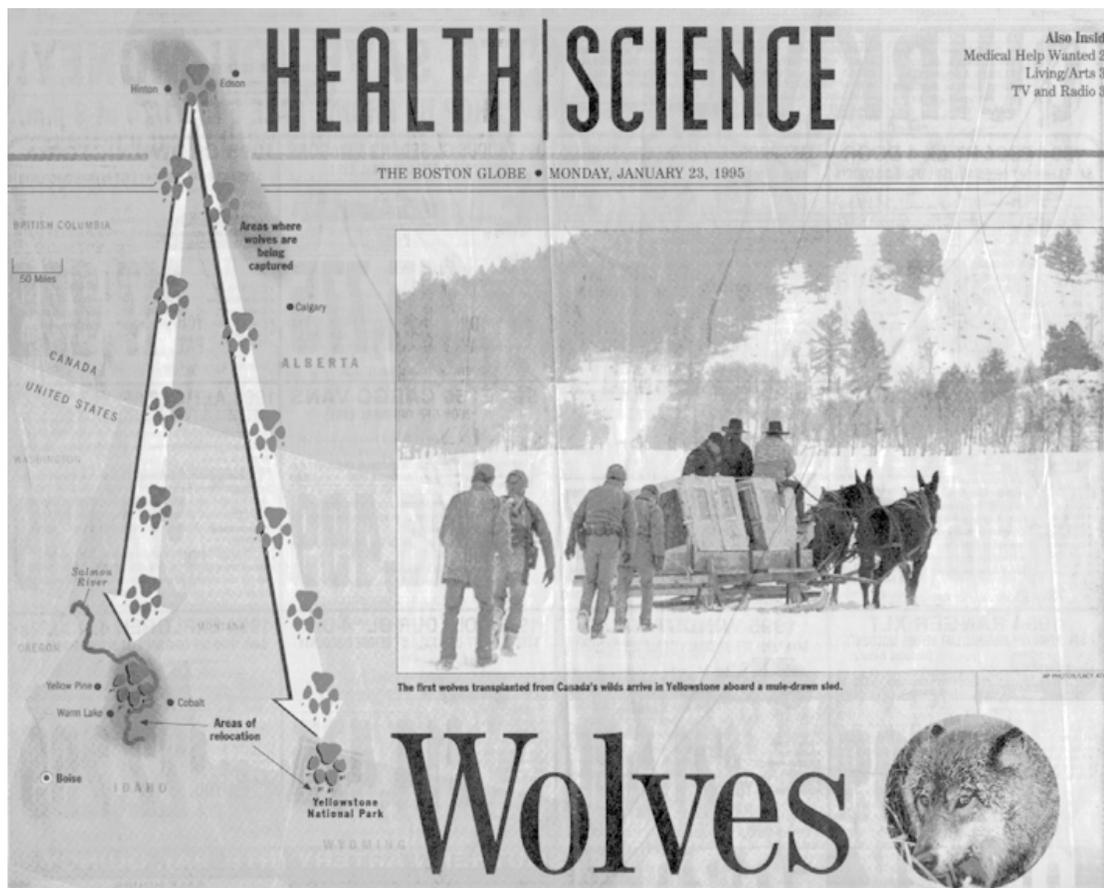
Courtesy Cape Cod Times

Press Releases and Feature Articles

These can be a powerful and effective means of reaching the public. Press releases can be devised to serve different functions: they can be used to inform the media about important matters deserving their attention, or they can serve as “copy” for direct use in media articles or presentations. Press releases should be clear, concise, factual and easy to comprehend, and be written at different levels or in different ways to reach specific target audiences.

At Riding Mountain National Park, Manitoba, there has been a serious problem with poaching black bears. It is not just a locally generated problem because bear gall bladders are taken for illegal distribution on the international “medicinal” black market. Thus, for shock value, the park staff quickly developed a rather sensationalized press release immediately after they learned that a key “research” bear had been illegally killed. The results were interesting, for not only did articles appear locally, but they appeared regionally and overseas as well. The approach may be one that cannot be repeated often, but this time it helped dampen the illusion that such illicit activities can go unnoticed locally or internationally.

Feature articles can also be a powerful means of getting important resource messages to various audiences. Articles in publications by the National Geographic Society, Audubon Society, major news magazines, and the like, can bring broad-scale issues such as air quality and biological diversity concerns to wide audiences. The results of mutual effort in this area can be quite effective. It is advantageous to have a well-informed park staff member on call to be interviewed when opportunities arise.



Courtesy Boston Globe and World Wide Photos



Environment
Canada

Environnement
Canada

Release

This information was released to the wire services on the date indicated. Despite the delay, some releases and speeches are mailed to out-of-town media because the content is not time-dependent or because it will be useful for background files.

FOR IMMEDIATE RELEASE

OCTOBER 11, 1991.

THE DUKE IS DEAD

Duke, a male black bear from Riding Mountain National Park, died a violent death, on the night of October 9th, or early October 10th. His remains, found in the sanitary land fill inside the park, indicated a brutal ending to a black bear who had contributed to a long-term research project. He had been shot once, ran some distance, and was again shot. It appeared that he had been shot at several times. Fallen, the black bear was slit from the top of the brisket through the middle part of the chest, and only his gall bladder had been removed.

Park wardens in Riding Mountain National Park are currently involved in the investigation of this wildlife murder. Park staff, local hunters, guides, naturalists, and other local residents are saddened from the tragic loss of this bear.

Duke weighed in at over 800 pounds (over 365 kilograms) in the fall of each year, and had just reached the prime of his life at 15 years of age..a middle-aged bear in a natural population. Assistant Chief Park Warden Ray Whaley commented, " that one of the biggest of the biggest is gone; researchers, guides, naturalists recognized his aura. He was killed in the prime of his life. This loss is a loss, in a sense, of what this park stands for."

Duke was the first bear in a joint federal-provincial black bear study, initiated in 1987, to cause federal and provincial researchers and biologists to really notice the extremely large size of Riding Mountain black bears. Duke, however, was not unique.

Canada



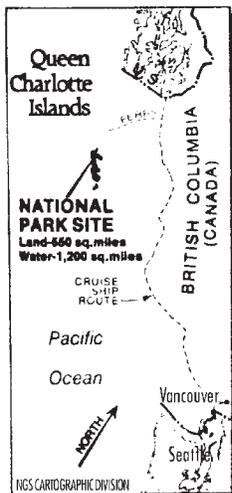
A press release from Riding Mountain National Park in Manitoba personalized the illegal killing of Duke a male black bear. The results brought international press coverage and attention to the problem. An article in National Geographic on the desirability of creating a national park in the South Moresby area of the Queen Charlot Islands, British Columbia, led to favorable results. Coverage by the Boston Globe, and other newspapers, of the reintroduction of wolves to Yellowstone National Park, has helped foster public understanding and support of this action.

NATIONAL GEOGRAPHIC

OCTOBER 1987

TOSS A PEBBLE into a pond, and rings of ripples immediately attest to its impact, but when we launch an article into our sea of 40 million readers, we can't always be there to see the effect. Thanks to a letter from Canadian Prime Minister Brian Mulroney, we had a quick and authoritative reading on the impact of our July 1987 article "Canada's Queen Charlotte Islands, Homeland of the Haida."

"I am sure it will interest you to know that, on July 11, I joined the Premier of British Columbia,



William Vander Zalm, to sign a Memorandum of Understanding for the establishment of a national park and a national marine park in the South Moresby area of the Queen Charlotte Islands.

"Your story's description in words and pictures of this cultural and ecological treasure was remarkable both for its content and timing. It illuminated wonderfully the value of preserving this area for future generations. As well, it demonstrated the deep interest the international

community shared with Canadians in bringing this matter to a successful resolution. Of the many voices raised in support of South Moresby, few spoke as eloquently and none reached as wide an audience as National Geographic."

The "matter" was a 13-year bare-knuckle battle between logging interests and a partnership of Indians and environmentalists over preserving—or exploiting—a piece of the amazing archipelago. From 1,000-year-old trees to unique aquatic life, it is virtually a northern Galápagos in ecological importance. To the Haida the area is precious as a source and repository of their art and culture.

The partnership has won. Many feel our article played an important part in the resolution of this old controversy. British Columbia-born writer Moira Johnston and photographer Dewitt Jones were among those honored at a Haida potlatch that served salmon, halibut, octopus, and scallops to 1,200 celebrators. In time the few logging jobs lost will be more than replaced by income from the many visitors who will come to enjoy the islands and Canada's first marine park.

Wilbur E. Garrett
EDITOR



Canadian Parks Partnership Partenaires des parcs canadiens

A nation-wide network of non-profit organizations working in partnership with your parks, historic sites and canals to support and enhance environmental and heritage education and preservation.

Réseau national d'organismes à but non lucratif, oeuvrant en association avec vos parcs, lieux, et canaux historiques pour appuyer et renforcer les programmes d'éducation et de protection environnementale et de conservation du patrimoine.

Thank you for your purchases which help to fund this work!

Merci pour vos achats ce qui nous aide à financer nos projets!

Courtesy National Geographic Society

Summary

Park interpreters, natural resource scientists, and resource conservation managers all need to find ways to effectively communicate local and broad-scale critical natural resource issues and solutions to the public. Individuals within these groups of specialists, under the direction of local park superintendents and regional administrators, should work as a team to execute these ideas. And while interpreters can be successful resource issue communication specialists, scientists and resource managers can, likewise, be effective interpreters by using appropriate techniques and methods. The common thread is resolving critical resource issues. A 1988 report by the National Parks and Conservation Association provided some thoughts worthy of consideration. The report cites a comment made by author and park observer Alfred Runte:

*Tilden's first principle states that interpretation should "relate what is being displayed or described to something within the personalities or experiences of every visitor present." Given the diversity of visitor groups, the key is not to rely exclusively on the facts but on something universally provocative. One common factor is that **virtually every park is threatened**. Today no form of provocation has greater relevance or importance than stimulating the visitor's perception of their responsibilities towards—and effect on—the resource.*

On a broader scale, the Canadian Department of Environment commented similarly in a publication reviewing the objectives of the *Green Plan* in 1990. In addition to making remarks about encouraging environmental citizenship based on appropriate knowledge, skills, and values, the report noted:

Nature has an intrinsic value that exceeds its worth in the market place. It supports a diversity of life on the planet and is essential to our well-being.

Respect for nature requires us to accept our responsibilities as its stewards. We do not own the environment. It is a trust we must protect for the benefit of current and future generations. The same ingenuity and innovative spirit that we have devoted to improving our standard of living must now be used to help preserve the quality of the environment.

Respect for nature also implies an attitude of prudence. Human actions can wreak serious, irreversible damage on the environment. Yet in deciding on an action, we rarely know all its environmental ramifications. Caution is therefore appropriate: we must prepare to give nature the benefit of the doubt. We should err on the side of protecting the environment.

Dividing the process of identifying and developing interpretive techniques and approaches into several interrelated steps has proven to be successful in a number of national park areas in the United States and Canada. The four-step process identified here is one of a variety of ways to organize and initiate interpretation of critical natural resource issues with an interest in seeking human generated solutions. Indeed, the process can be applied to cultural resource issues as well, keeping in mind that most national park sites contain both cultural and natural themes.

In essence, the interpretation of critical natural resource issues is, in itself, critical. Noted author Henry David Thoreau stated this concern quite simply and eloquently in yet another way a hundred years ago when he wrote, "in wildness is preservation of the world."

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As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.